A TONAL COMPARISON OF DIALECTS IN NAKHON RATCHASIMA PROVINCE, THAILAND

A thesis submitted to the University of London
for the Degree of Master of Philosophy

by

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ABSTRACT

The thesis is an attempt to describe the tonal systems and their distribution in individual local dialects within the province of Nakhon Ratchasima (NR) and to compare them with that of the Standard dialect and those of certain other northeastern dialects of Thailand. An attempt is also made to relate the present tonal system to the assumed original Proto-Tai tones.

The introductory chapter presents general information about the regional and local dialects of Thailand, and the geographical and linguistic background of the NR province. The scope and methodology of the thesis are also included.

The second chapter gives a brief account of the Standard Thai (ST) and Lao-Isan phonological systems.

The third chapter contains phonetic transcriptions of the data collected from nineteen local dialects in the NR province.

The fourth chapter discusses the correlations and restrictions of the tonal data presented in Chapter 3 with respect to syllable structure, and suggests a phonological interpretation.

Finally, the last chapter, Chapter 5, is concerned to relate the tones of the modern local dialects to the tones postulated for Proto-Tai by historical linguists.

Appendix 1 illustrates tonograms of six words representing the six pitch patterns of Khong local dialect.

Appendix 2 gives the complete Gedney test list of 64 words for determining tones in languages and dialects which belong to the Tai family.

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The experimental work in Appendix 1 was patiently carried out and prepared in the laboratory by Mr. A.W.Stone, the departmental technician, to whom my sincere thanks are due. And also my thanks go to Mr. Fox, the School photographer, for undertaking the photographs for this thesis.

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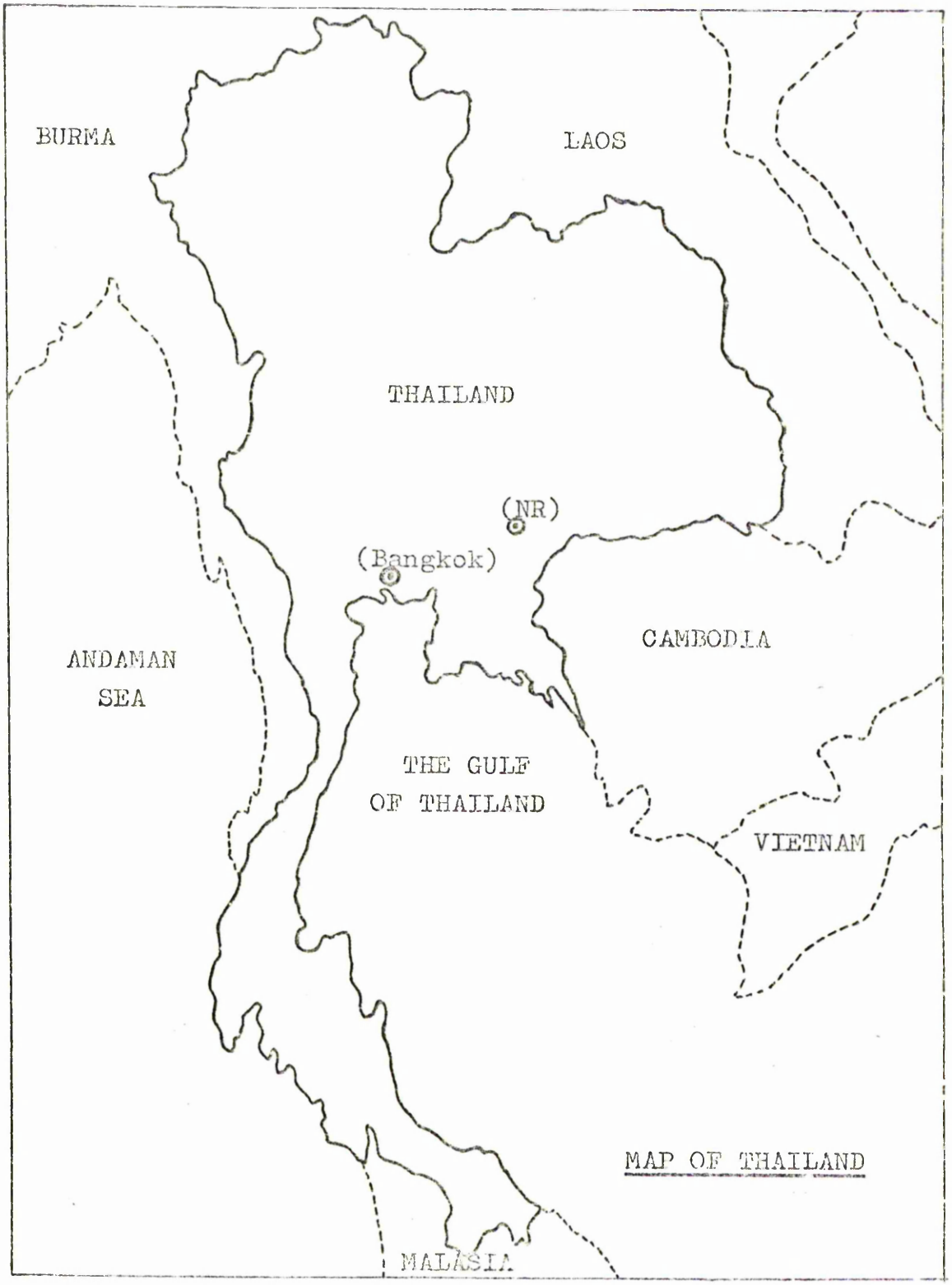

MAP OF THAILAND

CHAPTER 1

INTRODUCTION

Linguists are still debating as to whether the Thai language is genetically a member of the Sino-Tibetan or of the Austroasiatic language family. Thai is spoken by approximately 40 million people in the kingdom of Thailand in the Southeast Asian area called the Indochinese peninsula. Roughly speaking, there are four major dialect areas; North, Northeast, Central, and South. The dialect which is going to be studied here is the dialect of one of the provinces in the northeastern area called Nakhon Ratchasima. Nakhon Ratchasima (NR), unofficially called Khorat, is one of the most densely populated provinces in Thailand and is situated on the plateau in the northeast of the country. It borders on Chaiyaphum and Khon Kaen provinces in the north, Buriram province in the east, Saraburi and also Chaiyaphum provinces in the south.

According to the Thai administrative divisions, the whole country is divided into provinces which are called in Thai. Changwat; and from provinces into districts, called Amphoe; and from districts into sub-districts, called Tambon; and from sub-districts into villages which are called Ban.

Diagram 1.1 : Thai administrative hierarchy system with the equivalent Thai name

country	Thailand	language
↓	↓	↓
province	Changwat	dialect
↓	↓	↓
district =	Amphoe =	local dialect
↓	↓	
sub-district	Tambon	local dialect
↓	↓	
village	Ban	local dialect

From now on in this thesis, I shall refer to these sub-divisions by their Thai names, and call them Changwats, Amphoes, etc. Among the amphoes within each Changwat, there is a chief Amphoe which is called the Amphoe Muang, which may roughly be translated as the 'Central Amphoe'. The language of the Changwat as a whole is often referred to as the dialect of that particular province, but within the Changwat people speak a number of related sub-dialects according to the Tambon and Ban in which they live, which will be referred to henceforth as 'local dialects'. In NR there were 19 Amphoes at the time I did my fieldwork (1975-1976). That is, Amphoes Bua Yai, Chock Chai, Chum Phuang, Chakkarat, Dan Khun Thot, Huei Thalaeng, Khong, Khon Buri, Kham Thale So, Muang, Non Sung, Non Thai, Pak Chong, Phimai, Prathai, Pak Thong Chai, Sikhiu, Sung Noen, and Kham Sakae Saeng.

One of the most characteristic features of any dialect, differentiatiating Thai dialects from one another, is the tonal system. Tone plays an indispensable role in the Thai language group, not only for bearing lexical meaning but also as a means of demarcation between different Thai dialects. Indeed, the most useful criterion for dialect boundaries within the Thai-speaking area is the tonal system. Nonetheless, different Thai dialects within Thailand are often mutually intelligible among the Thai people. The dialect of NR not merely has a different tonal system from the Bangkok dialect, which has been adopted as a standard, but it also has tonal differences among local-dialects within itself. People from various localities within the province use different tonal systems. Thus it is interesting to find out:-

1. How many tones there are in each local dialect and what their realisations are.

2. The distribution of the tonal systems as well as the distribution of the tones over cognate words, in this area.

3. Whether the local dialects in this Changwat can be differentiated from each other by the number of tones.

NR is the gateway to other provinces or Changwats in the northeastern region of Thailand (see map on page 1). Its tonal system therefore is likely to be influenced both by Lao and Central Thai[1]. Many people have migrated into NR from other Changwats in the northeastern region and from Laos and have been doing so for a long period. Therefore, it is to be expected that there will be differences in the number of tones and in tonal systems generally scattered over this area.

Similar to most other Thai dialects in Thailand, the difference between NR and the standard dialect mostly lies in the phonetic shape of the tones and in their distribution over cognate words. For example, the word 'horse' is segmentally the same /ma:/ in both dialects but the pitch realisations are different. Moreover, in Standard Thai 'horse' has the tone which is different from the tone on the word for 'elder sibling', whereas in most NR local dialects these words have the same tone.

To make it easy to understand and to avoid confusion later on, the names of the local dialects discussed here are called after the names of the places to which the informants belong. The NR dialect as a whole is recognised as a mixture between the central and the northeastern Thai.

The purpose of this thesis is, therefore, firstly to study the phonetic nature of the tones, and their distribution over syllables of different types, as well as the number of tones in the tonal systems of the individual local dialects within this Changwat. My concentration is on the tonal systems rather than any other segmental or suprasegmental features. However, some interesting segmental features have not been neglected; they will be pointed out in a later chapter.

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[1] Central Thai is spoken in the geographical area of Thailand called the 'central plain' to which Bangkok, the capital, belongs.

My second aim is to classify local dialects into groups according to the number of phonemic tones and their distribution, and to compare different tonal systems among local dialects within this Changwat.

Thirdly, I shall look at the tones from the Thai historical point of view, to investigate how the tones from different local dialects split from the supposed original tones.

Data and Methodology

This study is based on data gathered during my three trips to the region in 1976 in which I visited various localities within this Changwat, and also on work with some informants in Bangkok. The local schools are the centre from which I chose my informants during my fieldwork.

The first step in this task was to prepare a questionnaire. The questionnaire which was used here is based on the 64-word list in Gedney's Tone Checklist of 1974, to which a few more words were added or occasionally omitted depending on the convenience of the informants. The second step was to establish criteria for the selection of informants. The aim was to select people (i) who had a similar level of educational background, (ii) who were of the same generation, and (iii) if possible who had been born in that particular Amphoe rather than moving in from some other areas, and (iv) who had an understanding of Standard Thai. Some of the informants chosen were at the time living in Bangkok, but it was felt to be important that they should not have been in Bangkok for more than three or four years, and that they regularly used their own local dialects at home or among peer groups who came from the same locality. For the informants living and studying in Bangkok, the prepared word-list was asked directly in Standard Thai, or by pointing to the objects, or sometimes with the aid of the Standard Thai orthography. But for the informants studying

in Changwat NR, extra help in eliciting information was needed from time to time from the local teachers. All informants were told beforehand to speak only their own local dialects when they gave their answers, and it was explained to them that they were representatives of their own areas. After the word-list, which each informant had been asked to say in his or her own local dialect, he/she was usually asked to repeat each word once or twice again into the tape-recorder. When data had been collected from every Amphoe, a preliminary analysis was made. This showed clearly that there may be four, five, or six distinctive tones in the system distributed over this NR province. These first results were felt to be interesting enough to encourage the collection of more data in some Amphoes where there were some doubts about the demarcation of the number of tones. Eventually, data had been collected from about fifty informants from the nineteen different Amphoes, and in some instances from several different localities, that is, Tambons or Bans, within the same Amphoe.

The fact that the list of words upon which the questionnaire was based was drawn up by Gedney for comparative purposes meant that when analysed the data collected could be correlated with the original tones reconstructed by Gedney and others for Proto-Tai[1].

Scope of the thesis

Since it is believed that the NR dialect is a hybrid dialect, a result of a mixture between Lao and central Thai dialects, it is felt that a tonal comparison of NR local dialects is of special interest. This study is an attempt not only to describe the tonal systems, their be-

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[1] The word 'Tai' is a general term which refers to the family of closely related languages and dialects of which Thai is a member.

haviour and distribution in individual local dialect within the NR Thai dialect area but also to compare the tones within and among these local dialects. As a result, the localities where people speak dialects of other language families, e.g., Mon-Khmer, are left out. The tapes of the informants' pronunciation of the words in the questionnaire are first transcribed phonetically, using a pitch notation derived from Y.R. Chao (see p. 25) to show the pitch pattern of each word. Then from these pitch patterns and their distributions a phonemic statement of the tonal systems of each local dialect is proposed. These tonal systems are then compared and correlated with current views about the history of the Thai tonal system in general.

Since the tapes made in the fields proved to be too full of extraneous outdoor noises to provide good tonograms when run through the Frøkjaer-Jensen pitch meter, an analysis of the tones of a Khong speaker living in London was made, as an illustration of the pitch behaviour of this one local dialect. (See Appendix 1)

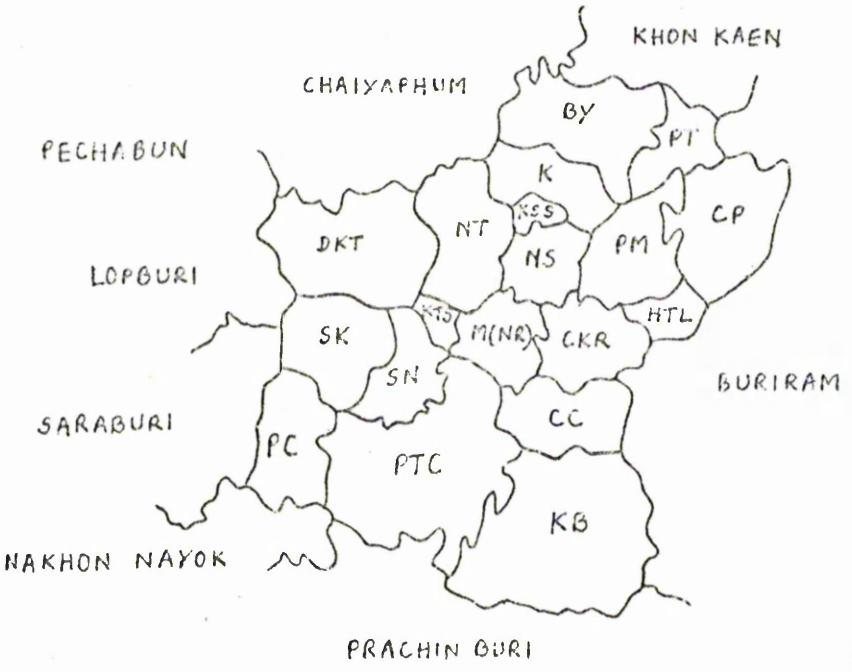
Abbreviations to be used

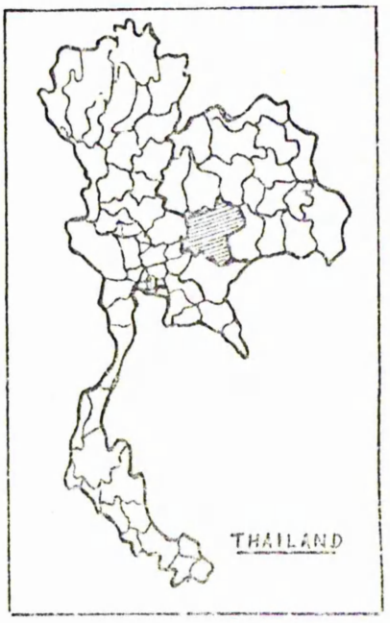
S	Abbreviated	form of	Short
L	"	"	Locality
A	"	"	Amphoe
T	"	"	Tambon
B	"	"	Ban
BY	"	"	Bua Yai
CC	"	"	Chock Chai
CP	"	"	Chum Phuang
CKR	"	"	Chakkarat
DKT	"	"	Dan Khun Thot
HTL	"	"	Huai Thalaeng
K	"	"	Khong
KB	"	"	Khon Buri
KSS	"	"	Kham Sakae Saeng
KTS	"	"	Kham Thale So
M(NR)	"	"	Muang (central Amphoe)
NS	"	"	Non Sung
PC	"	"	Pak Chong
PM	"	"	Phimai

PT	Abbreviated	form of	Prathai
PTC	"	"	Pak Thong Chai
SK	"	"	Sikhiu
SN	"	"	Sung Noen

ST

The following map is of Changwat Nakhon Ratchasima (NR) with nineteen Amphoes:





CHAPTER 2

BRIEF ACCOUNT OF THE PHONOLOGICAL SYSTEMS OF STANDARD THAI AND THE LAO-ISAN DIALECTS

The dialects spoken in the northeastern area of Thailand are known to the layman by the general name of Lao or Isan[1] dialects. This area comprises sixteen Changwats in all (see map on page 8) of which NR is one. In view of their geographical location, it is not surprising that these dialects are more closely related to the Lao language spoken in Laos than to the standard dialect, though both Lao and Thai are in the same linguistic group and family. Since most people are more or less aware of the similarities of the northeastern dialects in Thailand to the Lao of Laos, they usually recognise and designate the Thai northeastern dialects as Lao dialects, although these dialects are officially designated along political lines. That is, dialects spoken within Thailand are officially referred to as "Thai", while those spoken over the border in Laos are officially referred to as "Lao". NR is not merely the biggest and politically the most important Changwat in the northeast, but it is also the gateway to the rest of the northeastern part of Thailand. It is the crossroads where the central dialects, which are represented here by the Bangkok or standard dialect[2], and the northeastern dialects meet. These two main dialect groups, namely central and northeastern, may mingle and influence each other in different ways and to different degrees, producing as a result a dialect which is normally known to the

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[1] Literally = northeast

[2] By 'Bangkok Thai' is meant the dialect which is used by educated people and in official communication and is thus adopted and recognised as the Standard Thai dialect. As a result, the terms 'Standard dialect' and Bangkok dialect' are used and referred to alternatively by most linguists.

layman as the Khorat dialect, here called NR. Thus we find Brown stating that the Khorat dialect is a hybrid. He refers to it in the following way[1]:-

"One of the dialects treated here (Khorat) is apparently the result of a Lao dialect recoding to the central Thai completely; i.e., speaking central Thai with a Lao accent. It is mutually intelligible with central Thai and not with Lao, but its phonological system is Lao."

Consequently, it is clear that NR province is an area of gradual transitions between the central dialect area and the northeastern dialect region. So it may be expected that the tonal systems of the local dialects in areas close to other northeastern provinces will conform more closely to the overall pattern characteristic of the area, while those local dialects in areas nearer to the central provinces will be more like Standard Thai.

Before going on to deal in detail with different local dialects in various parts of Changwat NR, it is necessary to give the following brief general account of the phonological systems of Standard Thai and the Lao-Isan group of dialects some of which have already been studied in outline by other linguists[2]. From now on in this thesis, the dialects spoken in the northeastern region of Thailand will not be called either Lao or Isan after the lay usage in order to prevent the possibility of confusion with the Lao dialects of Laos. Instead, they will be called Lao-Isan dialects unless the name of the particular place is given, viz. the province. In other words, the name of the place will make it clear when it is put after Lao that the dialect which is being talked is in Thailand. For example, the Lao-Isan dialect spoken in Changwat Chaiyaphum will be called here Lao-Chaiyaphum.

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[1] Brown, J. M. From Ancient Thai to Modern Dialects. p. 23 ; 1965.

[2] For example, Chittham, Pinyo; Phisetkonlakit, Sonklin; and Thinmeephon, Praphai; and so on.

2.1 Summary of the Phonology of the Standard Thai Dialect

Bangkok, the capital is situated in the centre of Thailand in the area called the central plain. The regional dialects, namely central Thai, are spoken in this geographical area, including Bangkok; but the Bangkok dialect which is used by the majority of educated speakers has been adopted as the official language and recognised as the Standard Thai dialect of Thailand. It is the prestige dialect and also used in most newspapers, books, and radio and television broadcasts, as well as in the schools, universities, and government offices throughout the country.

The literature relevant to Standard Thai phonetics and phonology includes books and articles by Abramson (1962), Hass (1964), Henderson (1949), Harris (1972), Noss (1962), Gandour (1975), and Weroha (1975) to name only a few. The transcription and description of the phonemes of Standard Thai used in the present work have been adapted from Gandour, Henderson, and Weroha.

Tones

The Standard Thai tonal system consists of five phonemic tones. Their phonetic expression varies somewhat according to the phonetic context. These five tones may be described as :

1. MID, a mid level pitch with or without slight fall at the end, represented by the absence of a tone mark ( ) as in /kha:/ 'a kind of grass'.

2. LOW, a low level or low falling pitch, represented by a grave accent diacritic (̀) as in /khà:/ 'a kind of herb'.

3. FALLING, a rapidly falling pitch from high to low, represented by a circumflex (̂) as in /khâ:/ 'to kill'.

4. HIGH, a high level or high rising pitch, represented by an acute accent diacritic (́) as in /khá:/ 'to trade'.

5. RISING, a low rising pitch from low to high, repre-

sented by an inverse circumflex (ˇ) as in /khă:/ 'leg'.

All of these five contrastive tones may occur with 'smooth' syllables (i.e., those syllables ending in a nasal or vowel). On 'checked' syllables (i.e., those syllables ending in p, t, k, ?) there are only three contrastive tones. For 'short' checked syllables (viz. those checked syllables containing a short vowel) there is a contrast between high and low tone only; for 'long' checked syllables (viz. those checked syllables containing a long vowel or diphthong), there is a contrast between low and falling tone only.

Consonants

There are twenty one consonantal phonemes which may be symbolised and described in general phonetic terms as follows:-

1. /p/ when appearing initially in a syllable, represents an unaspirated voiceless bilabial plosive as in /pi:/ 'year'. As a syllable final it represents a bilabial stop (without plosion) as in /nâp/ 'to count'.

2. /ph/ represents an aspirated voiceless bilabial plosive as in /phî:/ 'older sibling'.

3. /b/ represents a voiced bilabial plosive as in /bɔ̀:/ 'well'.

4. /t/ when appearing initially in a syllable, represents an unaspirated voiceless alveolar plosive as in /ti:/ 'to beat'. As a syllable final it represents an unexploded alveolar stop as in /kàt/ 'to bite'.

5. /th/ represents an aspirated voiceless alveolar plosive as in /thoŋ / 'flag'.

6. /d/ represents a voiced alveolar plosive as in /di:/ 'good'.

7. /c/ represents a voiceless unaspirated alveolo-palatal affricate, [tɕ], as in /cáp/ 'to hold'.

8. /ch/ represents a voiceless aspirated alveolo-palatal affricate, [tɕh] , as in /chîn/ 'piece'.

9. /k/ when appearing initially in a syllable, represents an unaspirated voiceless velar plosive as in /kin/ 'to eat'. As a syllable final it represents an unexploded velar stop as in /mà:k/ 'betal nut'.

10. /kh/ represents a voiceless aspirated velar plosive as in /kham/ 'word'.

11. /?/ represents a glottal stop as in /?ì:k/ 'again', /phrá?/ 'monk'.

12. /f/ represents a voiceless labio-dental fricative as in /fŏn/ 'rain'.

13. /s/ represents a voiceless alveolar fricative as in /sŭ:ŋ/ 'high'.

14. /h/ represents a voiceless glottal fricative as in /hŭ:/ 'ear'.

15. /m/ represents a voiced bilabial nasals as in /nâ:m/ 'water', /má:/ 'horse'.

16. /n/ represents a voiced alveolar nasal as in /nâ:m/ 'water', /man/ 'greasy'.

17. /ŋ/ represents a voiced velar nasal as in /ŋu:/ 'snake', /liŋ/ 'monkey'.

18. /l/ represents a voiced alvelar lateral as in /lom/ 'wind'.

19. /r/ represents a voiced alveolar tap as in /ra:/ 'mould'.

20. /j/ represents a voiced palatal semi-vowel as in /ja:/ 'medicine'.

21. /w/ represents a voiced labio-velar semi-vowel as in /wan/ 'day'.

It should be noted that only /p, t, k, ?/, stops, and /m, n, ŋ/, nasals, occur finally in a syllable.

The following represents the only consonant clusters which may occur initially in a syllable :-

1. /kr/ as in /kròt/ 'acid'.
2. /kl/ as in /klâ:/ 'brave'.
3. /kw/ as in /kwa:ŋ / 'deer'.
4. /khr/ as in /khru:/ 'teacher'.
5. /khl/ as in /khla:n/ 'to crawl'.
6. /khw/ as in /khwan/ 'smoke'.
7. /tr/ as in /troŋ/ 'straight'.
8. /pr/ as in /pràp/ 'to fine'.
9. /pl/ as in /pla:/ 'fish'.
10. /phr/ as in /phrom/ 'carpet'.
11. /phl/ as in /phlóp/ 'dusk'.

The co-occurence and the restrictions on the first and second members of consonant clusters may be presented in the follcwing table :-

Table 1: Consonant Clusters in Standard Thai

First in clusters \ Second in clusters	/l/	/r/	/w/
/p/	pl	pr	-
/ph/	phl	phr	-
/t/	-	tr	-
/k/	kl	kr	kw
/kh/	khl	khr	khw

Vowels

Vowels in the standard dialect may be grouped into 3 types - single, diphthong, triphthong. There are nineteen pure vowel phonemes which may be symbolised and described as follows :-

1. /i:/ represents a long close front vowel with lips unrounded as in /nî:/ 'this'.

2. /i/ represents a short close front vowel with lips unrounded as in /nît/ 'tiny'.

3. /e:/ represents a long half-close front vowel with lips unrounded as in /ple:/ 'cradle'.

4. /e/ represents a short half-close front vowel with lips unrounded as in /jen/ 'cool'.

5. /ɛ:/ represents a long half-open front vowel with lips unrounded as in /lɛ̆:m/ 'sharp'.

6. /ɛ/ represents a short half-open front vowel with lips unrounded as in /phɛ́?/ 'goat'.

7. /a:/ represents a long open mid-back vowel with lips unrounded as in /ma:/ 'to come'.

8. /a/ represents a short open mid-back vowel with lips unrounded as in /mât/ 'to tie'.

9. /ɯ:/ represents a long close back vowel with lips unrounded as in /sɯ́:/ 'to buy'.

10. /ɯ/ represents a short close back vowel with lips unrounded as in /jɯ́t/ 'to seize'.

11. /ɤ:/ represents a long half-close back vowel with lips unrounded as in /dɤ:n/ 'to walk'.

12. /ɤ/ represents a short half-close back vowel with lips unrounded as in /ŋɤn/ 'money'.

13. /u:/ represents a long close back vowel with lips rounded as in /pù:/ 'paternal grandfather'.

14. /u/ represents a short close back vowel with lips rounded as in /jùt/ 'to stop'.

15. /o:/ represents a long half-close back vowel with lips rounded as in /to:/ 'big'.

16. /o/ represents a short half-close back vowel with lips rounded as in /mót/ 'ant'.

17. /ɔ:/ represents a long half-open back vowel with lips rounded as in /phɔ̂:/ 'father'.

18. /ɔ/ represents a short half-open back vowel with lips rounded as in /rɔ̂n/ 'to glide'.

Diphthongs

The front vowels may occur as the starting point of diphthongs moving towards a close back vowel, which may be represented as follows :-

1. /iu/ as in /hĭ̆u/ 'hungry'.
2. /eu/ as in /reu/ 'quick'.
3. /ɛ:u/ as in /lɛ:u/ 'bad'.
4. /ɐu/ as in /thɐu/ 'row'.
5. /ɛ:u/ as in /mɛ:u/ 'cat'.

/a:/ and /a/ may occur as the starting point of diphthongs moving towards either a close back or a close front vowel, which may be represented :-

6. /a:i/ as in /să̆:i/ 'late'.
7. /ai/ as in /pai/ 'to go'.
8. /a:u/ as in /nă̆:u/ 'cold'.
9. /au/ as in /rau/ 'we'.

The back vowels may occur as the starting point of diphthongs moving towards a close front vowel, which may be represented as follows :-

10. /ɤi/ as in /lɤi/ 'beyond', [ɤ:i] .
11. /ui/ as in /khui/ 'to converse'.
12. /oi/ as in /doi/ 'by', [o:i] .
13. /ɔi/ as in /hɔ̆i/ 'shell fish'.
14. /ɔ:i/ as in /lɔ:i/ 'to float'.
15. /ɯi/ as in /hɯi/ 'a word used for encouraging a buffalo'.

The close vowels /i, u, ɯ/ may occur as the starting point of diphthongs moving towards a more open vowel, which may be represented as follows :-

16. /iə/ as in /miə/ 'wife, female'.
17. /uə/ as in /hŭə/ 'head'.

18. /ɯə/ as in /klɯə/ 'salt'.

The direction of the movement of diphthongs here may be generalised and summarised into three types as follows:-

1. front ——→ back
2. back ——→ front
3. close ——→ open

Triphthongs

/i/ may occur as the starting point of triphthongs moving towards a more open vowel and thence towards a close back rounded vowel, which may be represented:-

1. /iəu/ as in /pliòu/ 'lonesome'.

/u/ may occur as the starting point of triphthongs moving towards a more open vowel and thence towards a closer front vowel, which may be represented :-

2. /uəi/ as in /puòi/ 'to be sick'.

/ɯ/ may occur as the starting point of triphthongs moving towards a more open vowel and thence towards a closer front vowel which may be represented :-

3. /ɯəi/ as in /lɯ̂òi/ 'a saw'.

It should be noted that for reasons of economy, convenience, and symmetry, many linguists regard the final elements in what are phonetically diphthongs and triphthongs as realisations of the phonemes /j/ and /w/. According to this analysis, therefore, the triphthongs are interpreted phonemically as centering diphthong phonemes followed by /j/ or /w/. That is,

/iəu/ = /iə/ + /w/
/uəi/ = /uə/ + /j/
/ɯəi/ = /ɯə/ + /j/

The phonetic diphthongs ending with close vowels are similarly regarded as ending with the final consonant phonemes /j/ and /w/. For instance,

/iu/ = /i/ + /w/
/a:i/ = /a:/+ /j/
/oi/ = /o/ + /j/

In this thesis it has been decided to treat such sequences as unitary phonemes, as shown on p. 16-17.

Summary of the Phonology of the Lao-Isan Dialects[1]

By and large, the segmental phonemes (consonants and vowels) of the so-called Lao-Isan dialects are more or less the same as those of the standard dialect. The phonemes which occur in both Lao-Isan and Standard Thai have the same nature and distribution unless it is stated otherwise. However, there are some differences which will be described below :-

Consonants

In Lao-Isan dialects there are no /r/ or /ch/ phonemes, but there is a palatal nasal [ɲ] not found in Standard Thai. As far as the first two are concerned, sound correspondences between Standard Thai and Lao-Isan are systematic and predictable. The reflexes of words which in Standard Thai have initial /ch/ or /r/ regularly have initial /s/ and /h/ respectively in Lao-Isan ; e.g.,

Standard	Lao-Isan[2]	Gloss
/chɯ̂:/	/sɯ:/	'name'
/chá:ŋ/	/sa:ŋ/	'elephant'
/cha:i/	/sa:i/	'rim'
/rák/	/hak/	'to love'
/rú:/	/hu:/	'to know'

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[1] From Chittham, P. Dialects (Thai), and my own field-notes.

[2] The tones of Lao-Isan dialects throughout this chapter are not given due to the fact that their pitch patterns vary from one area to another.

In some Lao-Isan dialects the palatal nasal [ɲ] functions as a phoneme. As such it occurs in initial position only, and corresponds regularly to initial /j/ in Standard Thai ; e.g.,

Standard	Lao-Isan	Gloss
/jâ:ŋ/	/ɲa:ŋ/	'to walk'
/jɯ̂:n/	/ɲɯ:n/	'to protrude'
/ja:/	/ɲa:/	'paternal grandmother'

In other Lao-Isan dialects the sound [ɲ] is in free variation with initial [j], and so may be regarded as an allophone of the /j/ phoneme. Hence in such dialects the words cited above would be realised :

Phonemic Structure	Realisations
/jâ:ŋ/	[ja:ŋ] or [ɲa:ŋ]
/jɯ̂:n/	[jɯ:n] " [ɲɯ:n]
/ja:/	[ja:] " [ɲa:]

What has been said in the preceding paragraphs applies to the usage in what may be thought of as 'pure' Lao-Isan dialects, i.e.,those whose phonological system has not been affected by that of Standard Thai. However, since Standard Thai is accepted and recognised as the official language, and is used as the medium of communication between people from different dialectal communities, it has an influence upon other dialects to varying degrees, depending upon the ease of communication in the areas concerned. The spread of the standard dialect is inevitable because of the progress of modern telecommunication, i.e., radio[1] which is one of the most influential media, and because of the government's policy for the development of the rural areas and provinces other than Bangkok. Moreover, it is believed and is in fact the case that people from the different

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[1] In the same way as BBC English is supposed to be the norm dialect and used for broadcasting throughout the country.

Changwats find it an advantage to know and be able to understand and employ the standard dialect, when they come into contact with speakers of other dialects. It has thus come about that the phonological systems of many of the regional dialects have been unavoidably affected and are in the process of being assimilated to varying degrees to that of the standard dialect. The standard dialect has undoubtedly had a great influence on many of the Lao-Isan dialects. In some, the two Standard Thai phonemes /ch/ and /r/ have been introduced by some of the local people. There is, however, a complication with /r/ in that in Standard Thai, this phoneme appears to be merging with /l/, and is realised as [l], except in very formal style. Lao-Isan speakers, who already have an /l/ phoneme, usually pronounce words corresponding to Standard Thai words with initial /r/ as if they began with /l/, e.g.,

Standard Thai (ST)	Lao-Isan (LI)
/rák/	[lak]
/rú:/	[lu:]

The sound [l] may thus be regarded as competing with [h] in words which correspond to /r/ in Standard Thai.

Consonant Clusters

There are no consonant clusters in the Lao-Isan dialects. They (Lao-Isan forms) correspond to the first consonant of the clusters in the standard dialect. Thus :-

	ST	LI			
1.	pl, pr	p	as in	/pla:/ → /pa:/	'fish'
				/pràp/ → /pap/	'to find'
2.	phl, phr	ph	as in	/phlóp/ → /phop/	'dusk'
				/phró:m/ → /pho:m/	'ready'
3.	tr	t	as in	/troŋ/ → /toŋ/	'straight'
4.	kl, kr, kw	k	as in	/kla:ŋ/ → /ka:ŋ/	'middle'
				/kroŋ/ → /koŋ/	'cage'
				/kwian/ → /kian/	'cart'

	ST	LI			
5.	khl khr khw	→ kh	as in	/khla:n/ → /kha:n/ /khru:/ → /khu:/ /khwa̋:/ → /lhuə/	'to crawl' 'teacher' 'right hand'

It should be noted that in 3, some people also use the sound [k] instead of [t], thus [troŋ] → [koŋ].

Vowels

Among the Lao-Isan dialects, some have /ɯə/, some do not. For the dialects which do not have /ɯə/, the words with /ɯə/ in the standard dialect correspond to words with /iə/ in Lao-Isan. For example :-

ST	LI	Gloss
/klɯə/	/kiə/	'salt'
/sɯ̂ə/	/siə/	'shirt'
/ŋɯ̀ək/	/ŋiək/	'gums'

However, for the Lao-Isan dialects which do not have a separate phoneme /ɯə/, [ɯə] may be heard in free variation with [iə] in words which have /ɯə/ in the standard dialect. It should be noted that this mostly occurs in the young generation.

Tones

It is in their tonal systems that Lao-Isan dialects vary most from the standard dialect. There are six tones in most Lao-Isan dialects[1]; for instance, Lao-Chaiyaphum, Lao-Khon Kaen, Lao-Nakhon Phanom, Lao-Nongkhai, Lao-Ubon, and Lao-Udon, and so on. The 6-tone system may be taken on the whole as the characteristic tonal system of the Lao-Isan speaking area in the northeast of Thailand. Though most dialects have a total of six tones, their pitch realisations vary from dialect to dialect and from place to place. Two sample tonal systems from Lao-Isan dialects in

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[1] Some have seven tones.

provinces other than NR are given below:

Lao--Chaiyaphum[1]

1. Low--rising
2. Low with slight rise
3. Mid with slight rise
4. Mid-level
5. Low-level with glottal constriction
6. High-falling with glottal constriction

Lao-Nakhon Phanom[2]

1. Low-rising
2. High-level
3. Low-falling with glottal constriction
4. Mid-level
5. Mid-falling with glottal constriction
6. High-falling with glottal constriction

It will be seen that though the number of tones is the same in each dialect, the pitch realisations are different.

Later parts of this thesis will be concerned with the tonal systems of the local dialects of NR province and their pitch realisations. It is interesting to compare the distribution of the tonal systems of Standard Thai and the Lao-Isan dialects in NR province, and to compare the NR local dialects among themselves, both as regards the number of tones in the system and the pitch realisations of these tones.

As has been pointed out, one of the striking points of the dialects in the Tai language family is the instability of tones, as compared with the relative stability of other phonological features, for example, as reported by Jones[3] as follows :-

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[1] From Brown; From Ancient Thai to Modern Dialects. p.107

[2] From the author's fieldnotes.

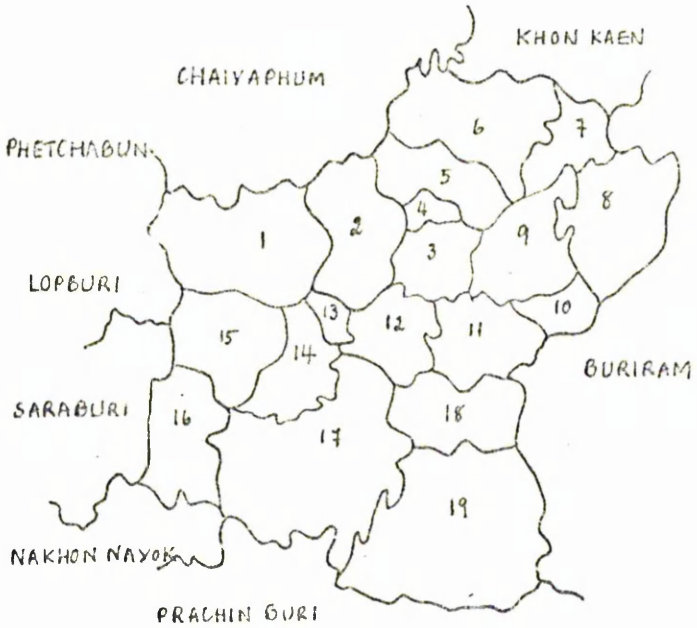
[3] R.B.Jones. "Tone Shift in Tai Dialect." Tai Linguistics. p.171.

"In studying Tai dialects one is struck by the great instability of tones between dialects even those close in relationship and in geographic proximity, as opposed to the relative stability of other phonological features. By this is meant the phonetic shape of tones rather than the types and numbers of contrasts. In this latter sense Tai dialects are fairly stable and a great deal conforms to the regular correspondences."

CHAPTER 3

PHONETIC TRANSCRIPTIONS OF LOCAL DIALECTS IN 19 AMPHOES

Throughout this chapter attention is directed at the description of local dialects from all the 19 Amphoes of Changwat Nakhon Ratchasima. The local dialects which are named here according to the 19 different Amphoes are listed below with some general information and identified by the abbreviated form of the Amphoes' names. They will be described in numerical order according to the number which is shown in the map[1]. The phonetic transcriptions of the words in each Amphoe are given in the tables along with the notes of points of particular phonetic interest in each local dialect throughout this chapter. In the following tables, in order to demonstrate the pitch patterns clearly, the pitch patterns will be noted by means of a vertical re-



1.	DKT	11.	CKR
2.	NT	12.	M(NR)
3.	NS	13.	KTS
4.	KSS	14.	SN
5.	K	15.	SK
6.	BY	16.	PC
7.	PT	17.	PTC
8.	CP	18.	CC
9.	PM	19.	KB
10.	HTL		

Diagram 3.1: NR & the neighbouring Changwats

[1] Language Map of Thailand and its Handbook, 1977.

ference line signifying a speaker's pitch range which is devided into four equal parts so as to indicate five relative pitch levels. The simplified time-pitch curve which attaches to the right of the vertical line shows the pitch patterns, the general direction of the pitch contours of the tones. Otherwise, the phonetic transcriptions used here are based on the IPA system. This method of illustrating tones was originally devised by a sinologist, Y.R. Chao and later was adapted by J.R. Chamberlain, the Tai linguist, for demonstrating tones in the Tai language family, and since then it has been recognized and employed by most Tai linguists.

In the following tables, the pitch pattern which occurs with short checked syllables will be grouped separately and be regarded as different from the ones on smooth syllables. The principal reason for doing this will become clear later in this chapter (see Chapter 5). In any case short checked syllables sometime occur with pitch contours which do not coincide with those found on other syllable type. It is thus convenient to treat them separately.

3.1 DKT local dialect (Table 2)

A. DKT is situated on the western side of Changwat NR. Apart from its borders with A. NT, KSS, KTS, and SK, its western border adjoins Changwats Chaiyaphum and Lopburi too. Most people here have been living in this Amphoe for generations.

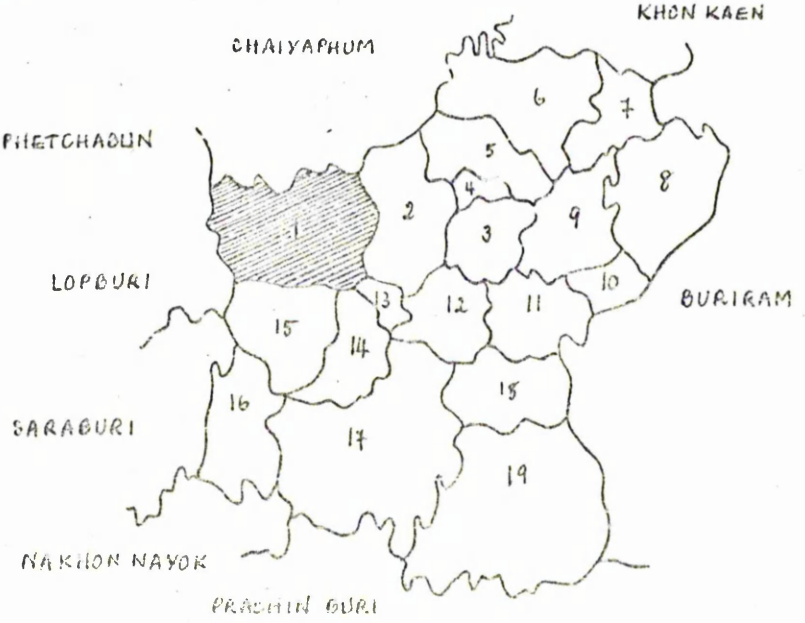


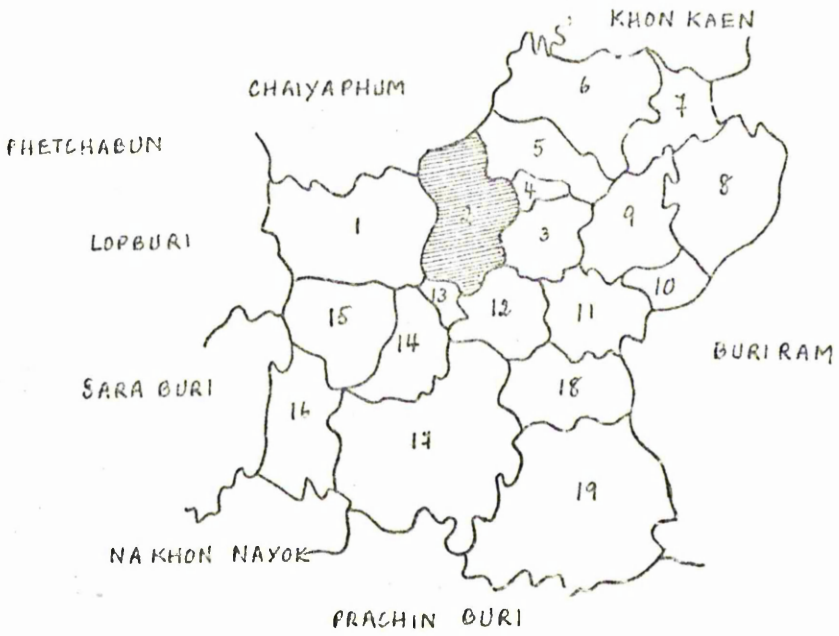
TABLE 2. DKT LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising	hu:
2	leg		kha:
3	head		huə
4	year	Mid-level	pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	hand		mu:
11	buffalo		khuəi
12	ricefield		na:
13	forest	Low-level	pa:
14	chicken		kai
15	old		kɛ:
16	shoulder		ba:
17	young man		bau
18	to scold		da:
19	lungs		pɔ:t
20	wing		pi:k
21	to pound		tɔ:k
22	sunshine		dɛ:t
23	to bathe		ʔa:p
24	flower		dɔ:k
25	older sibling	High-falling	phi:
26	father		phɔ:
27	dry field		lai
28	aunt		pa:
29	rice seedlings		ka:
30	to boil		tom
31	crazy		ba:
32	village		ba:n
33	to open		ʔa:
34	water		na:m
35	younger sibling		nɔ:ŋ
36	wood		mai
37	knife		mi:t
38	child		lu:k
39	blood		liət
40	outside		nɔ:k
41	flea	* S-High-level/	mat
42	cooked	S-Low-level	suk
43	vegetable		phak
44	frog		kop
45	liver		tap
46	to hurt		tɕep
47	fishhook		bet
48	raw		dip
49	chest		ʔok
50	bird	* S-Mid-level/	nok
51	to tie	S-High-level	mat
52	to steal		lak

* It should be noted that the informant is inconsistant with the pitch patterns when she pronounced these words.

3.2 NT local dialect (Table 3)

A. NT is one of the boundary Amphoes which borders on Changwat Chaiyaphum, and is surrounded by six other Amphoes, that is, A. DKT, KTS, M, NS, KSS, and K.



In this local dialect (Table 3) it should be noted that the quality of two vowel sounds [ɛ] and [ɔ] as in words no. 8, 18, 29, and 31, etc., is slightly different from the standard dialect, they are less open. Moreover, the vowel sound [ɯ] as in words no. 10 and 27 is an open [ɯ̞]. The [ɦ] sound occurs nasalised in the word no. 3.

TABLE 3. NT LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:
2	leg		kha:
3	head		ʔhuə
4	year	Mid-level 	pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	hand		mɯ:
11	buffalo		khuəi
12	ricefield		na:
13	egg	Low-level 	khai
14	to split		pha:
15	knee		khau
16	forest		pa:
17	chicken		kai
18	old		kɛ:
19	shoulder		ba:
20	young man		ba:u
21	to scold		da:
22	rice		khau
23	shirt		sɯə
24	to kill		kha:
25	fever		khai
26	torn		kha:t
27	gums		ŋɯək
28	to carry on pole		ha:p
29	lungs		pɔ:t
30	wing		pi:k
31	to pound		tɔ:k
32	sunshine		dɛ:t
33	to bathe		ʔa:p
34	flower		dɔ:k
35	older sibling	High-falling 	phi:
36	father		phɔ:
37	dry field		lai
38	five		ha:
39	aunt		pa:
40	rice seedlings		ka:
41	to boil		tɑm
42	crazy		ba:
43	village		ba:n
44	to open		ʔa:
45	water		na:m
46	younger sibling		nɔ:ŋ
47	wood		mai
48	horse		ma:
49	knife		mi:t
50	child		lu:k
51	blood		luət
52	outside		nɔ:k

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
53	flea	S-Low-level 	mat
54	cooked		suk
55	vegetable		phak
56	frog		kop
57	liver		tap
58	fishhook		bet
59	raw		dip
60	chest		ʔok
61	bird	S-High-rising 	rok
62	to tie		mat
63	to steal		lak

3.3 NS local dialect (Table 4)

A.NS is surrounded by the following Amphoes :- NT, KSS, PM, CKR, and M.

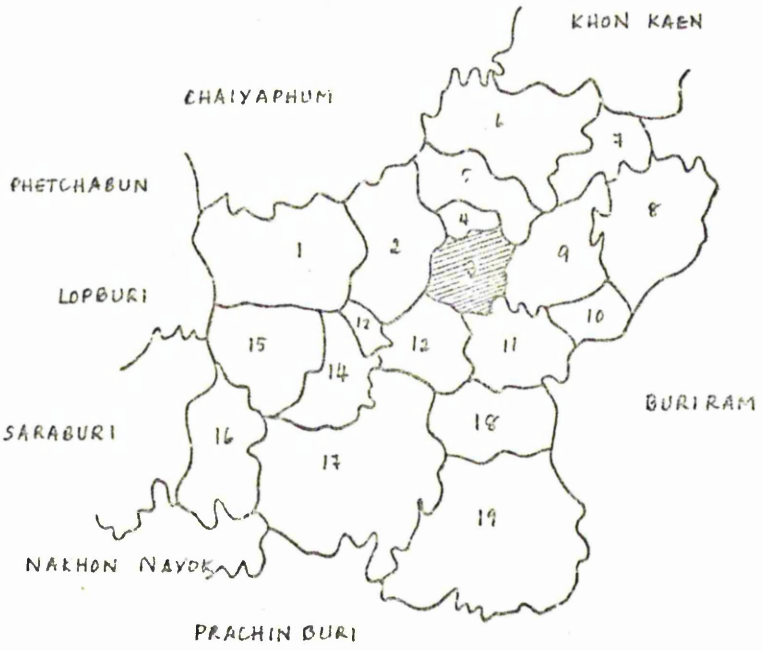
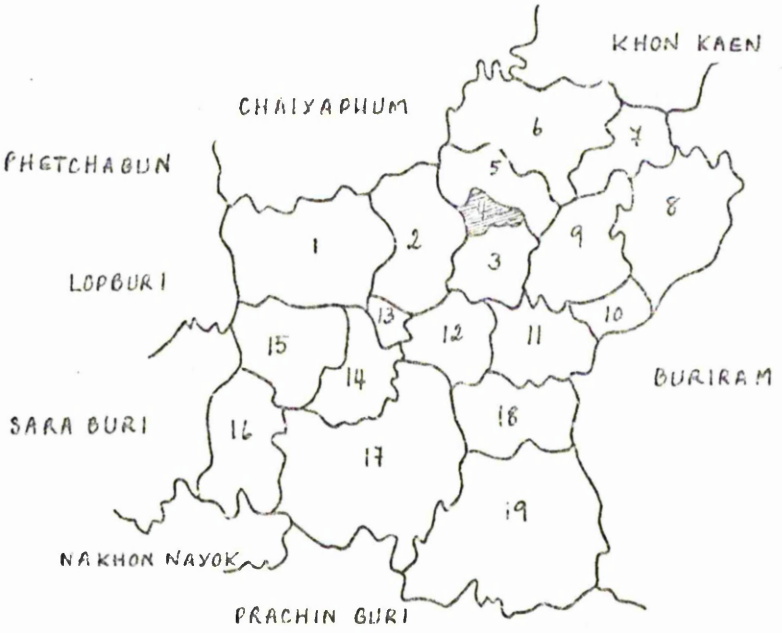


TABLE 4. NS LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:
2	leg		kha:
3	head		huə
4	year		pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	hand	Mid-level 	mɯ:
9	ricefield		na:
10	egg	Low-level 	khai
11	forest		pa:
12	shoulder		ba:
13	rice		khau
14	torn		kha:t
15	gums		ŋɯɔk
16	lung		pɔ:t
17	sunshine		dɛ:t
18	older sibling	High-falling 	phi:
19	to boil		tom
20	crazy		ba:
21	water		na:m
22	knife		mi:t
23	wood		mai
24	flea	S-High-rising 	mat
25	vegetable		phak
26	frog		kop
27	fishhook		bet
28	raw, unripe		dip
29	chest		ʔok
30	to catch hold on		koʔ
31	bird	S-Mid-level 	nok

3.4 KSS local dialect (Table 5)

A. KSS is situated right in the middle of the northern area of the Changwat, surrounded by four other Amphoes, NS, PM, K, and NT. A. KSS had just been raised to the status of an Amphoe when I conducted my fieldwork in 1976. It had been separated off from A. NS. The informant from this locality was born here but his father was originally from A. CKR.



It should be noted that the velar stop initial sound is pronounced a little bit further back than usual in this local dialect as in words no. 15, 19, 25, and so on.

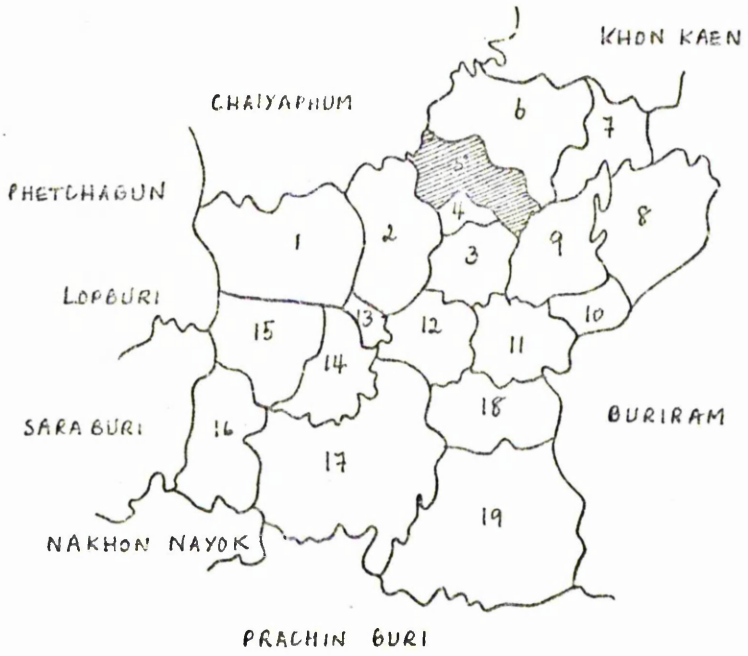
TABLE 5. KSS LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising	hu:
2	leg		kha:
3	head		huə
4	year		pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	dog		ma:
11	pig		mu:
12	hand	Mid-level	mu̱:
13	buffalo		khuəi
14	ricefield		na:
15	egg	Low-falling	kha̱i
16	to split		pha:
17	knee		khau
18	forest		pa:
19	chicken		ka̱i
20	shoulder		ba:
21	young man		bau
22	to scold		da:
23	rice		khau
24	shirt		suə
25	to kill		kha̱:
26	fever		kha̱i
27	torn		kha̱:t
28	gums		ŋuək
29	to carry on pole		ha:p
30	lungs		pɔ:t
31	wing		pi:k
32	sunshine		dɛ:t
33	to bathe		ʔa:p
34	flower		dɔ:k
35	older-sibling	High-falling	phi:
36	father		phɔ:
37	dry field		lai
38	five		ha:
39	aunt		pa:
40	rice-seedlings		ka̱:
41	to boil		tom
42	crazy		ba:
43	village		ba:n
44	to open		ʔa:
45	water		na:m
46	younger-sibling		nɔ:ŋ
47	wood		ma:i
48	horse		ma:
49	knife		mi:t
50	child		lu·k
51	blood		luət

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
52	outside		nɔ:k
53	flea	S-High-rising	mat
54	cooked		suk
55	decayed		phuʔ
56	vegetable		phak
57	frog		kop
58	liver		tap
59	to hurt		tɕep
60	fishhook		bet
61	raw		dip
62	chest		ʔok
63	bird	S-Mid-falling	nok
64	to tie		mat
65	to steal		lak

3.5 K local dialect (Table 6)

A. K is bounded by another Changwat and other Amphoes. That is, by Changwat Chaiyaphum, A. BY in the north, A. PM in the east, A. NS in the south, and A. NT in the west. The informants who helped me are from the same Tambon, Muang Khong.



It is interesting to note that the length of the vowel in the word no. 51 of speaker 1 is not as long as his long vowels but it is not as short as his short vowel. It is in between the long and short vowels. In addition, words no. 37 and 52 of speaker 2 have a glottal stop as a final instead of a long vowel in word no. 37, and instead of a velar stop in word no. 52, as would be expected by comparison with other local dialects.

TABLE 6. K LOCAL DIALECT

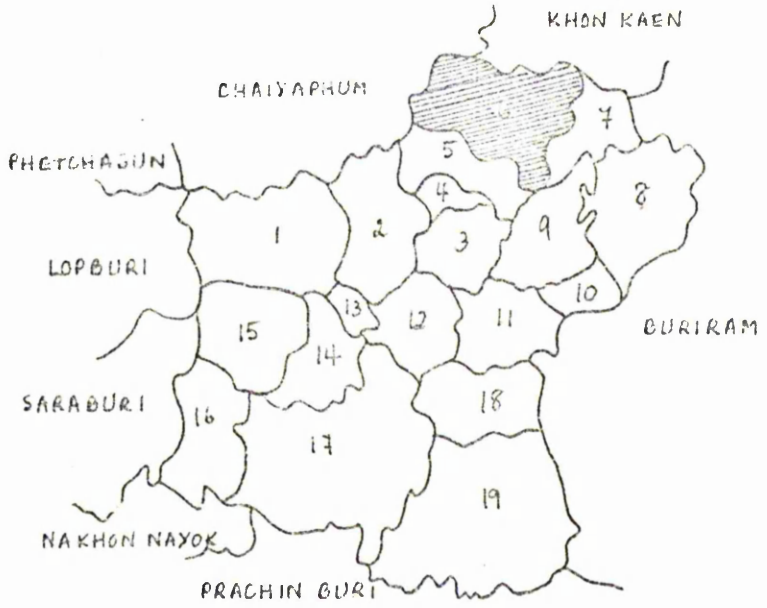
NO.	English glossary	Speaker 1		Speaker 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising	hu:	Low-rising	hu:
2	leg		kha:		kxha:
3	head		huə		huə
4	year		pi:		pi:
5	eye		ta:		ta:
6	to eat		kin		kin
7	to fly		bin		bin
8	red		dɛ:ŋ		dɛ:ŋ
9	star		da:u		da:u
10	hand	Mid-level	mɯ:	Mid-level	mɯ:
11	buffalo		khuəi		-
12	ricefield		na:		na:
13	egg	Low-falling	khai	Low-falling	kxhai
14	to split		pha:		pha:
15	rice		khau		khau
16	forest		pa:		pa:
17	chicken		kai		kai
18	old		kɛ:		kɛ:
19	shoulder		ba:		ba:
20	young man		ba·u		ba:u
21	to scold		da:		da:
22	rice		khau		khau
23	shirt		sɯə		sɯə
24	to kill		kha:		kha:
25	fever		khai		khai
26	torn		kha:t	Low-level	kha:t
27	gums		ŋɯək		ŋɯək
28	to carry on pole		ha:p		ha:p
29	lung		pɔ:t		pɔ:t
30	wing		pi:k		pi:k
31	to pound		tɔ:k		tɔ:k
32	sunshine		dɛ:t		dɛ:t
33	to bathe		ʔa:p		ʔa:p
34	flower		dɔ:k		dɔ:k
35	five	High-falling	ha:	Low-falling	ha:
36	older-sibling		phi:	High-falling	phi:
37	father		phɔ:	S-Mid-level	phɔʔ
38	dry field		lai	High-falling	lai
39	aunt		pa:		pa:
40	rice-seedlings		ka:		ka:
41	to boil		tom		tom
42	crazy		ba:		ba:
43	village		ba:n		ba:n
44	to open the mouth		ʔa:		ʔa:
45	water		na:m		na:m
46	to trade		kha:		-
47	younger-sibling		nɔ:ŋ		nɔ:ŋ
48	wood		ma:i		ma:i
49	horse		ma:		ma:

TABLE 6. K LOCAL DIALECT (cont.)

NO.	English glossary	Speaker 1		Speaker 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
50	knife		mi:t		mi:t
51	child		lu•k		ɬu:k
52	blood		luət		ɬuə?
53	outside		nɔ:k		nɔ:k
54	to trade		kha:		–
55	flea	S-High-rising	mat	S-Higher-Mid-rising	mat
56	cooked		suk		suk
57	vegetable		phak		phak
58	frog		kop		kop
59	liver		tap		tap
60	to hurt		tɕep		tɕep
61	fishhook		bet		bet
62	raw		dip		dip
63	chest		?ok		?ok
64	to catch-hold on		kɔ?		–
65	bird	S-Mid-level	nok	S-Mid-level	nok
66	to tie		mat		mat
67	to steal		lak		lak

3.6 BY local dialect (Table 7)

The name of the local dialect spoken here is called Bua Yai after the name of the Amphoe which borders on the other two Changwats, Khon Kaen, Chaiyaphum[1]; and the other three Amphoes; that is, PT, PM, and K. Most people in this Amphoe are natives but there are also some who have migrated from other northeastern Changwats, for instance, from Mahasarakham.



After the results of the preliminary analysis came out, it was found that this local dialect has six tones while the neighbouring ones have four and five. In order to find where actually, if it is possible, the boundaries of these different tone systems are, eleven informants were selected as representatives of various local dialects from different Tambons and Bans within this Amphoe. That is, from

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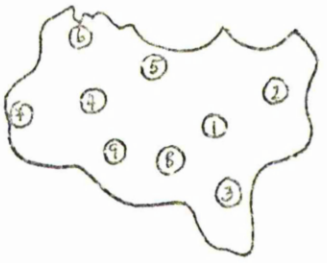
[1] See tones of Khon Kaen and Chaiyaphum in Brown's From Ancient Thai to Modern Dialects. p. 107; 101.

1. T Muang Bua Yai
2. T Kut Chock
3. T Phon Thong - B Non Thua Pap
   - B Sida
4. T Huai Yang - B Kau Ngiu
   - B Huai Yang
5. T Bua Lai
6. T Dan Chang
7. T Bueng Phalai
8. T Sema Yai
9. T Nong Bua Sa-at



Map of A. BY

The various localities listed in the Table 7 on page 39 are as follows :-

L 1 = T Muang Bua Yai
L 2 = T Kut Chock
L 3 = T Phon Thong, B Non Thua Pap
L 4 = T Huai Yang, B Kau Ngiu
L 5 = T Huai Yang, B Huai Yang
L 6 = T Bua Lai
L 7 = T Dan Chang
L 8 = T Bueng Phalai
L 9 = T Phon Thong, B Sida
L 10 = T Sema Yai
L 11 = T Nong Bua Sa-at

From Table 7, it is found that in some words; that is, 'lungs' (33) and 'sunshine' (36), the pronunciation of the vowels is varied from place to place. In L4, L5, L10, and L11, instead of using a pure vowel, the diphthongs [ɔə] and [ɛə] are employed as the variants of [ɔ:] and [ɛ:] respectively. The length of the vowels in words 'water' (49) and 'wood' (51) is different from place to place. That is, for

the word 'water' (49) it is short in L5 but long in other localities. Also, the vowel in the word 'wood' (51) is long in L4 but short in I4. And in the word 'shirt' (26), 'gums' (31), and 'blood' (55), the diphthong [ɯə] has been replaced by [iə] in I4. Lastly, the vowel used in the word 'chest' (65) in I4 is [ɤ:] instead of [o:] which one would expect by comparison with other local dialects.

For the consonant sounds, one of the most striking points is the glottalised sound which occurs initially in L5 as in words 'to fly' (8), 'shoulder' (22), 'crazy' (45), and 'fishhook' (63); while it is a bilabial voiced sound in other local dialects in this area. It is interesting to note that only in this local dialect in L5 that all words listed here which begin with a bilabial voiced sound may have the initial consonant sound glottalised.

In the word 'blood' (55), three sounds were employed; that is, [dl-] , [l-], and [ɬ-] in this Amphoe. In I4, the words 'to eat' (7) and 'old' (21), the initial consonant is more or less palatal in quality. The tongue is advanced to near the palatal position. Furthermore, in the word 'hurt' (62), the initial sound is more retracted than in other dialects, so that it looks as if the velar and alveo-palatal obstruents may be merging before front vowels in I4. In addition, the initial sound [h-] is nasalised in some areas as in words 'ear' (1) and 'head' (3). [kxh-] and [kh-] were pronounced alternatively in some words in this Amphoe as can be seen for example in L3 and I4. Finally, the initial consonant sound in word 'gum' (31), the informant from I4 utilised the palatal nasal while all the others employ velar nasal.

TABLE 7. BY LOCAL DIALECT

No.	English gloss	L 1		L 2		L 3		L 4		L 5		L 6		L 7		L 8		L 9		L 10		L 11	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Lower-mid rising	hu:	Low-rising	hu:	Low-rising	hu:	Low-rising	ku:	Lower-Mid-rising	hu:	Low-rising	hu:	Low-rising	hu:	Low-rising	hu:	Low-rising	hu:	Low-rising	hu:	Low-rising	hu:
2	leg		kha:		kha:		kha:		kwa:		-		-		kha:		kha:		khai		xoa:		-
3	head		hav		-		-		hav		-		-		-		-		-		-		-
4	day		-		-		nu:		-		-		-		ma:		-		ha:		-		-
5	year	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Low-level	-
6	eye		ta:		-		pi:		ta:		-		ta:		ta:		-		-		ka:		ta:
7	to eat		kin		kin		kin		kin		khin		kin		-		-		-		kin		khin
8	to fly		bin		bin		-		bin		-		bin		bin		bin		bin		kan		hok
9	rod		dæŋ		-		dæŋ		dæŋ		-		-		-		-		-		-		-
10	star		dɨu		-		-		-		-		-		-		-		-		-		-
11	tallgrass		-		-		-	High-mountain-ed-falling	-	High-mountain-ed-falling	-	High-mountain-ed-falling	-	High-mountain-ed-falling	khai:	High-mountain-ed-falling	khai:	High-mountain-ed-falling	khai:	In-mountain-ed-falling	-	High-mountain-ed-falling	-
12	hand		ma:		ma:		ma:		ŋa:		ma:		ma:		ma:		ha:		ha:		ma:		ma:
13	buffalo		-		-		-		khwi		-		-		-		-		-		-		-
14	rice-field		na:		na:		na:		na:		-		-		na:		-		-		-		-
15	six	Low-falling	khai	Low-falling	khai	Low-falling	khai	High-level	khai	High-level	khai	High-level	khai	High-level	khai	High-level	-	High-level	-	High-level	khai	High-level	khai
16	a herb		kha:		-		-		kha:		-		-		-		kha:		kha:		-		-
17	to split		pha:		-		-		-		-		-		-		pha:		pha:		-		-
18	knee		khau		-		-		khau		-		-		-		-		-		khau		-
19	forest		pa:		pa:		pa:		pa:		pa:		pa:		pa:		pa:		pa:		pa		pa:
20	chicken		kai		-		-		kai		-		-		-		-		-		-		-
21	old		ki:		-		-		ɣi:		-		-		-		-		-		-		-
22	shoulder		ba:		ba:		ba:		ba:		ba:		ba:		-		ba:		ba:		ba:		ba:
23	young man		baːu		-		-		baːu		-		-		-		-		-		-		-
24	to scold		da:		-		-		da		-		-		da		-		-		-		-
25	rice		khau		khau		khau		khau		-		-		-		-		-		-		-
26	shirt		sua		-		-		sia		-		-		-		-		-		-		-
27	to kill		kha:		-		-		kha:		-		-		-		-		-		-		-
28	fever		khai		-		-		khai		-		-		khai		khai		kha:		-		khai
29	five	High-falling	ha:		-		-		ha:		-		-		-		-		-		-		-
30	torn	Low-falling	khaːt		khaːt		khaːt		kʰaːt		khaːt		kʰaːt		-		-		-		kʰaːt		khaːt
31	guns		pɨak		-		-		pɨak		-		-		-		-		-		-		-
32	to carry on pole		haːp		-		-		haːp		-		-		haːp		haːp		haːp		-		-
33	lungs		poːt		poːt		-		poːt		poːt		poːt		-		-		-		poːt		poːt
34	wing		piːk		-		piːk		piːk		-		-		-		-		-		-		-
35	to pound		toːk		-		-		toːk		-		-		-		-		-		-		-
36	sunshine		dɨːt		dɨːt		dɨːt		dɨːt		dɨːt		dɨːt		-		-		-		dɨːt		dɨːt
37	to battle		ʔaːp		-		-		ʔaːp		-		-		ʔaːp		-		-		-		-
38	flower		dɨk		-		-		dɨk		-		-		-		dɨk		-		-		-
39	older-sibling	High-falling	phiː	High-falling	phiː	High-falling	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	phiː	Mid-level	-
40	father		phoː		-		phoː		-		-		-		-		-		-		phoː		phoː
41	dry field		lai		-		lai		-		-		-		-		-		-		-		hai
42	aunt		paː		paː		paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː	Higher-mid falling	paː
43	rice-seedlings		kaː		-		-		kaː		-		-		-		-		-		kaː		-
44	to boil		tom		-		-		tom		-		-		-		-		-		-		-
45	crazy		baː		-		baː		baːn		baː		baː		baː		-		-		naː		naː
46	village		baːn		-		-		ʔaː		-		-		-		baːn		baːn		-		-
47	to open		ʔaː		-		-		kʰaː		-		-		-		-		-		-		-
48	to trade		kʰaː		-		kʰaː		naːm		-		naːm		naːm		kʰaː		kʰaː		-		naːm
49	water		naːm		naːm		naːm		-		naːm		-		-		-		-		-		-
50	younger-sibling		noːŋ		-		-		-		-		-		-		-		-		-		-
51	wood		maːi		-		-		-		-		-		-		-		-		-		-
52	horse		maː		-		-		maː		-		-		-		-		maː		-		-
53	knife		miːt		miːt		miːt		miːt		miːt		miːt		miːt		-		-		miːt		miːt
54	child		lukˀ		-		-		lukˀ		-		-		-		-		lukˀ		-		-
55	blood		dɨatˀ		-		-		ɬatˀ		-		-		-		-		-		-		-
56	outside		nɔkˀ		-		-		nɔkˀ		-		-		-		-		-		-		-
57	flea	S-high-level	mat	S-high-rising	mat	S-high-level	mat	S-mid-rising	mat	S-high-rising	mat	S-high-rising	mat	S-high-rising	mat	S-high-rising	mat	S-high-rising	mat	S-high-rising	mat	S-high-rising	mat
58	cooked		sukˀ		-		-		sukˀ		-		-		-		-		-		sukˀ		sukˀ
59	vegetable		phakˀ		-		-		phakˀ		-		-		-		-		-		-		-
60	frog		kop		kop		kop		kop		kop		kop		kop		kop		kop		kop		kop
61	liver		tap		-		-		tap		-		-		-		-		-		-		-
62	to hurt		tɨap		-		-		ɬapˀ		-		-		-		-		-		-		-
63	fishhook		bet		bet		bet		bet		ɓet		bet		bet		bet		bet		bet		bet
64	raw		dip		-		-		dip		-		-		-		-		-		-		-
65	roast		ʔokˀ		-		-		ʔokˀ		-		-		-		-		-		-		-
66	to catch hold on		-		-		-		koʔ		-		-		-		-		-		-		-
67	bird		nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-level	nok	S-mid-falling	nok	S-mid-level	nok
68	to tie		mat		-		mat		mat		-		-		-		mat		mat		-		hmat
69	to steal		lak		-		-		lak		-		-		-		-		-		-		tak

3.7 PT local dialect (Table 8)

Two different Tambons were selected in A.Prathai which borders on Changwat Buriram and three other Amphoes; viz., CP, PM, and BY.

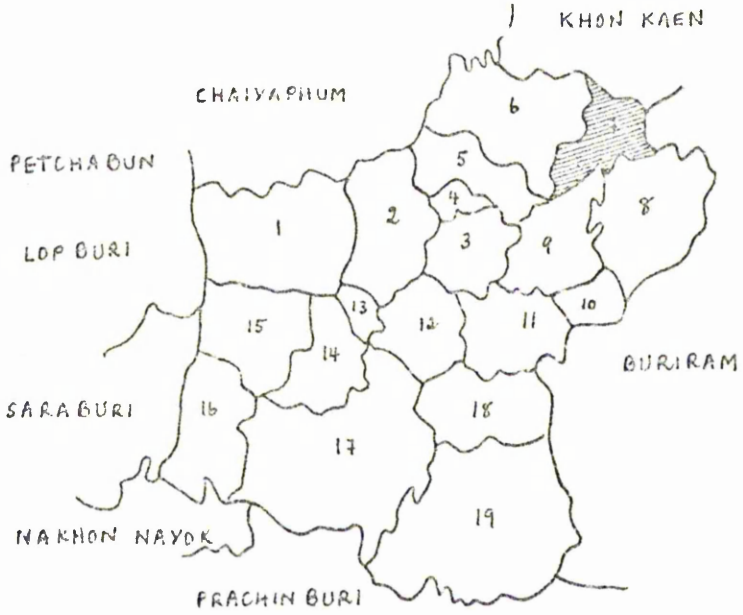


TABLE 8. PT LOCAL DIALECT

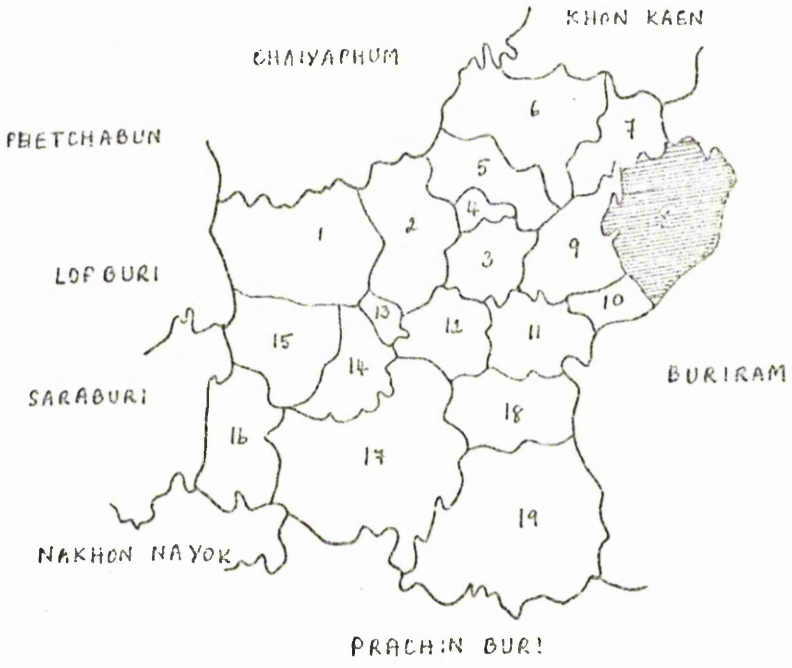
NO.	English glossary	L 1		L 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:	Low-rising 	hu:
2	leg		kha:		-
3	head		bua		-
4	year	Mid-level 	pi:	Mid-level 	pi:
5	eye		ta:		--
6	to eat		kin		-
7	to fly		bin		bin
8	older-sibling		phi:		phi:
9	father		pho:		-
10	dry field		hai		-
11	hand		mu:	High-sustained -falling	mu:
12	rice - field		na:		-
13	egg	High-level	khai	High-level	khai
14	to split		pha:		-
15	forest		pa:		pa:
16	shoulder		ba:		ba:
17	rice	Low-level	khau	Low-level 	khau
18	shirt		sua		-
19	torn		kha:t		kha:t
20	lung		po:t		po:t
21	to pound		to:k		-
22	sunshine		da:t		da:t
23	aunt	High-falling 	pa:	High-falling 	pa:
24	rice-seedlings		ka:		-
25	to boil		tom		-
26	crazy		ba:		ba:
27	water		na:m		na:m
28	younger-sibling		no:ŋ		--
29	horse		ma:		-
30	knife		mi:t		-
31	flea	S-Higher-Mid-rising 	mat	S-High-rising 	mat
32	cooked		suk		-
33	frog		kop		kop
34	fishhook		bet		bet
35	bird	S-Mid-level 	nok	S-Mid-level 	nok

L 1 = T Non Phit

L 2 = T Non Ta Then

3.8 CP local dialect (Table 9)

Chum Phuang is one of the Amphoes which borders not only on other Amphoes, PT, PM, and HTL but also on another Changwat, that is Buriram. In this Amphoe, six different localities were investigated. In T Muang Yang, most inhabitants have migrated from other northeastern provinces; Roi-et and Udon Thani[1].



From Table 9, it will be seen that in L 4 the words 'older sibling' and 'father' (37, 38) are pronounced with short vowel and closed with glottal stop instead of a long vowel without any final consonant sound which one would expect by comparison with other local dialects in this Amphoe. Another striking feature is [h] which is sometimes nasalized [ɦ̃] in some localities as in L 1, L 2, L 3, L 5, and L 6 in this Amphoe. The sound [kxh-] occurs as a variant of [kh] as one can see in L4 and L5. In L1, the voiceless unaspirated palatal affricate [tɕ] is employed in the word 'old' (19) instead of the usual [k] like any other local dialects. But in L3 the voiceless unaspirated

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[1] See Brown's From Ancient Thai to Modern Dialects; 104, 108

palatal stop [c] or [k͡] is pronounced in the word 'to hurt' (59) instead of [tɕ].

One striking point in the pronunciation of the vowel in this Amphoe is the diphthong which occurs as a variant of the single long vowel. That is, [ɛə] replaces [ɛ:] and [ɔə] replaces [ɔ:] in L1, L3, L5, and L6 as in words 'red', 'lung', and 'sunshine' (9, 31, 34). The vowel sound in the word 'buffalo' (12) is [uai] in L3 and L4 while [uəi] in others. Also for words 'shirt', 'gums', and 'blood' (24, 29, and 52), three variants appear, viz., [iə] in L1; [ɯə] in L5; and [ɰə] in L4. Lastly, the sound [ɤ] is pronounced in L1 in the word 'chest' (62) instead of [o] as in the other localities.

The various localities listed in Table 9 on page 44 are as follows :-

L 1	=	T Muang Yang, B Non Ta Sut
L 2	=	T Sarai
L 3	=	T Talat Sai, B Ta Jong
L 4	=	T Thalart
L 5	=	T Muang Yang, B Non Peep
L 6	=	T Chong Maew

TABLE 9. CP LOCAL DIALECT

NO.	English Glossary	L 1		L 2		L 3		L 4		L 5		L 6	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising	ʰhu:	Lower-Mid-rising	ʰhu:	Low-rising	ʰhu:	Low-rising	hu:	Lower-Mid-rising	ʰhu:	Lower-Mid-rising	ʰhu:
2	leg		kha:		kha:		kha:		kʰha:		kʰha:		kha:
3	head		ʰhuə		ʰhuə		ʰhuə		–		–		–
4	dog		ma:		–		–		–		–		–
5	year	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:		pi:		pi:	Mid-level	pi:
6	eye		ta:		ta:		ta:		ta:		ta:		ta:
7	to eat		kin		kin		kin		kin		kin		–
8	to fly		bin		bin		bin		bin		bin		bin
9	red		dɔŋ		–		dɔ:ŋ		dɔ:ŋ		dɔ:ŋ		–
10	star		da:u		–		da:u		da:u		da:u		–
11	hand	High-sustained-falling	mu:	High-sustained-falling	mu:		mu:	Mid-level	mu:	High-level	mu:	High-level	mu:
12	buffalo		khuai		–		khuai		khuai		khuai		–
13	ricefield		na:		–		na:		na:		na:		na:
14	egg	High-level	khai	High-level	khai	High-level	khai	Low-level	kʰhai		khai		khai
15	to split		pha:		–		pha:		–		pha:		pha:
16	knee		khau		–		khau		khau		–		–
17	forest		pa:		pa:		pa:		pa:		pa:		pa:
18	chicken		kai		–		kai		kai		kai		–
19	old		tɔɛ:		–		kɛ:		kɛ:		–		–
20	shoulder		ba:		ba:		ba:		ba:		ba:		ka:
21	young man		ba:u		–		–		bau		–		–
22	to scold		da:		da:		–		da:		–		–
23	rice	Low-falling	khau	Low-level	khau	Low-falling	khau		khau	Low-level	kʰhau	Low-falling	khau
24	shirt		sɨə		–		–		sɯə		sɯə		–
25	to kill		kha:		–		–		kʰha:		–		–
26	fever		khai		–		khai		khai		–		–
27	five		ha:		–		ha:		ha:		–		–
28	torn		kʰha:t		kʰha:t		kʰha:t		kʰha:t		kʰha:t		kha:t
29	ears		ʔjɨk		–		–		ʔjɯk		–		–
30	to carry		ha:p		–		ha:p		ha:p		–		–
31	lungs		pɔət		pɔ:t		pɔət		pɔ:t		pɔət		pɔət
32	wings		pi:k		–		–		pi:k		–		pi:k
33	to pound		tɔ:k		–		–		tɔ:k		–		–
34	sunshine		dɔət		dɔ:t		–		dɔ:t		dɔət		dɔət
35	to bathe		ʔa:p		–		ʔa:p		ʔa:p		–		–
36	flower		dɔ:k		–		–		dɔ:k		–		–
37	older-sibling	Mid-level	phi:	High-level	phi:	Mid-level	phi:	S-Higher-Mid-level	phiʔ	Mid-level	phi:	Mid-level	phi:
38	father		phɔ:		–		–		phɔʔ		phɔ:		–
39	dry field		hai		–		–	High-falling	hai		–		–
40	aunt	Higher-Mid-falling	ʔja:	High-falling	pa:	High-falling	pa:		pa:	High-falling	pa:	High-falling	pa:
41	rice-seedlings		ka:		–		–		ka:		–		–
42	to boil		tom		–		–		tom		–		–
43	crazy		ba:		ba:		ba:		ba:		ba:		ba:
44	village		ba:n		–		–		ba:n		ba:n		–
45	to open		ʔa:		–		–		ʔa:		ʔa:		–
46	water		nam		nam		nam		nam		–		nam
47	younger-sibling		ŋɔ:ŋ		–		–		ŋɔ:ŋ		–		–
48	wood		mai		–		–		mai		–		–
49	horse		ma:		–		–		ma:		–		–
50	knife		mi:t		mi:t		–		mi:t		mi:t		mi:t
51	child		luk		–		luk		luk		–		–
52	blood		lɨət		–		lɯt		lɯ:t		–		–
53	outside		nɔ:k		–		nɔ:k		nɔ:k		–		–
54	flea	S-Mid-rising	mat	S-Higher-Mid-rising	mat	S-Higher-Mid-rising	mat	S-High-rising	mat	S-High-rising	mat	S-High-rising	mat
55	crooked		suk		–		–		suk		suk		–
56	vegetable		phɨk		phuk		phɨk		phɯk		–		–
57	frog		kop		–		kop		kop		kop		–
58	liver		tap		–		tap		tap		–		tap
59	to hurt		tɔ:p		tɔ:p		gɨp		tɔ:p		–		–
60	fishhook		bet		–		bet		bɨt		bet		bet
61	raw		dip		dip		dip		dip		–		–
62	chest		ʔɔk		–		–		ʔɔk		–		–
63	to catch-hold of		kɔʔ		–		–		–		–		–
64	bird	S-Mid-level	nok	S-Mid-level	–	S-Mid-level	nok	S-Mid-level	nok	S-Mid-level	nok	S-Mid-level	nok
65	to tie		mat		mat		mat		mat		–		–
66	to steal		lak		–		lak		lak		–		–

3.9 PM local dialect (Table 10)

A. Phimai is surrounded by A. CP, HTL, CKR, NS, K, BY, and PT. Five different areas from four Tambons in this A. have been investigated.

In this local dialect as shown in Table 10 on page 46, the diphthong occurs as a variant of the single long vowel; that is, [ɛə] or [ɛ:] as in the word 'sunshine' (33) in L2. The words 'older sibling' (36) and 'father' (37) are pronounced [phi?] and [pho?] respectively in L3. But in L1 and L4, the word 'father' is pronounced the same as in L2, while the word 'older sibling' is pronounced [phi:] as in other local dialects of L2 and L5.

The five localities which have been investigated in this A are as follows :-

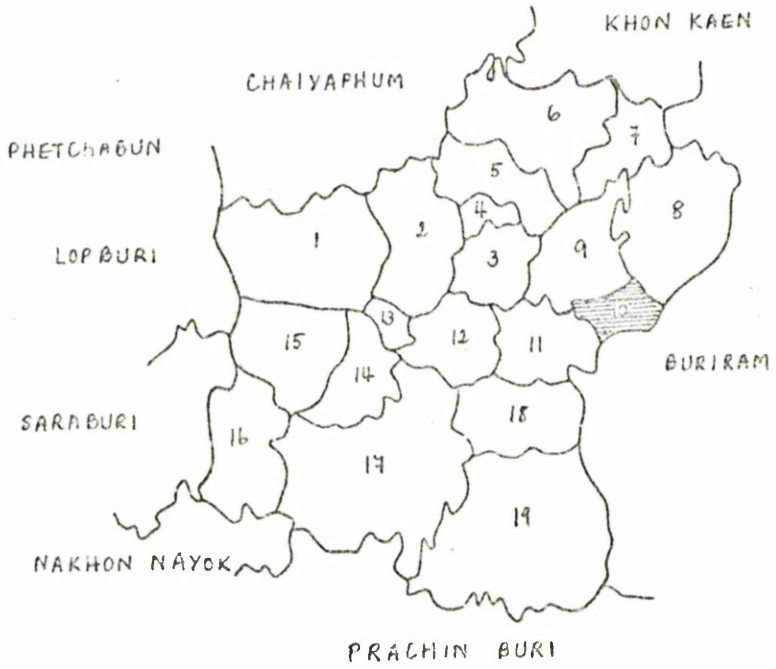
L 1	=	T	Boat	L 3	=	T Cheowan
L 2	=	T	Samrit	L 4, L 5	=	T Muang (Phimai)

TABLE 10. PM LOCAL DIALECT

NO.	English Glossary	L 1 Pitch pattern and label	L 1 Phonetic transcript.	L 2 Pitch pattern and label	L 2 Phonetic transcript.	L 3 Pitch pattern and label	L 3 Phonetic transcript.	L 4 Pitch pattern and label	L 4 Phonetic transcript.	L 5 Pitch pattern and label	L 5 Phonetic transcript.
1	ear	Low-rising:	ʔu:	Low-rising:	ʔu:	Low-rising:	ʔu:	Low-rising:	ʔu:	Low-rising:	ʔu:
2	leg		-		-		-		khɑ:		khɑ:
3	head		-		-		-		hɑ:		hɔ:
4	year	Mid-level	pi:	Mid-level	pi:		pi:		pi:		pi:
5	eye		-		-		-		ta:		ta:
6	to eat		-		-		-		kin		kin
7	to fly		bin		bin		-		bin		bin
8	nail		-		-		-		dɔ:ŋ		dɔ:ŋ
9	star		-		-		-		dɔ:u		dɔ:u
10	hand		nu:		nu:	Mid-level	nu:	Mid-level	nu:	Mid-level	nu:
11	buffalo		-		-		-		-		khɑ:l
12	ricefield		na:		na:		-		na:		na:
13	eye	Low-falling	khɑ:	Low-level	kʰɑ:	Low-level	khɑ:	Lower-mid-falling	khɑ:	Low-falling	khɑ:
14	knee		khau		khau		khau		khau		khau
15	to split		phɑ:		-		-		phɑ:		phɑ:
16	forest		pɔ:		pɔ:		pɔ:		pɔ:		pɔ:
17	chicken		-		kai		-		kai		kai
18	cold		-		kɔ:		-		kɔ:		kɔ:
19	young man		-		-		-		-		bau
20	shoulder		bɑ:		bɑ:		ba:		bɑ:		bɑ:
21	to scold		-		-		-		dɑ:		dɑ:
22	two		khau		khau		khau		khau		khau
23	shirt		-		-		-		sɑ:		sɑ:
24	to kill		-		-				kha:?		khɑ:
25	fever		-		-		-		khɑt		khɑt
26	five		-		-		-		hɑ:		hɑ:
27	torn		khɑ:t		kʰɑ:t		khɑ:t		khɑ:t		khɑ:t
28	grass		-		-		-		pɑ:k		pɑ:k
29	to carry on pole		-		-		-		hɑ:p		hɑ:p
30	lungs		pɔ:t		pɔ:t		pɔ:t		pɔ:t		pɔ:t
31	wings		-		-		-		pi:k		pi:k
32	to pound		-		-		-		tɔ:k		tɔ:k
33	sunshine		dɔ:t		dɔ:t		dɔ:t		dɔ:t		dɔ:t
34	to bathe		-		-		-		ʔɑ:p		ʔɑ:p
35	flower		-		-				dɔ:k		dɔ:k
36	older sibling	High-falling	phi:	High-falling	phi:	S-Mid-level	phi?	Mid-falling	phi:	High-falling	phi:
37	father	S-Mid-level	pho?		pho:		pho?	S-Mid-level	pho?		pho:
38	dry field	High-falling	-		-	High-falling	lai	Mid-falling	lai		lai
39	aunt		pɑ:		pɑ:		pɑ:		pɑ:		pɑ:
40	rice-seedlings		-		-		-		kɑ:		kɑ:
41	to boil		-		-		-		tom		tom
42	crazy		bɑ:		bɑ:		bɑ:		bɑ:		bɑ:
43	village		-		-		-		bɑ:n		bɑ:n
44	to open		-		-		-		ʔɑ:		ʔɑ:
45	water		nɑ:m		nɑ:m		nɑ:m		nɑ:m		nɑ:m
46	younger-sibling		-		-		-		nɔ:ŋ		nɔ:ŋ
47	wood		-		-		-		mai		mai
48	horse		-		mɑ:		-		mɑ:		mɑ:
49	knife		mi:t		mi:t		mi:t		mi:t		mi:t
50	child		-		-		-		luk		luk
51	blood		-		-		-		lɑst		lɑst
52	outside		-		nɔ:k		-		nɔ:k		nɔ:k
53	then	S-High-rising	nɑt	S-Low-level	nɑt	S-High-rising	nɑt	S-High-level	nɑt	S-High-rising	nɑt
54	cooked		suk		sʰuk		-		sʰuk		sʰuk
55	vegetable		-		-		-		phɑk		phɑk
56	frog		-		kʰop		kʰop		kʰop		kʰop
57	liver		-		-		-		tɑp		tɑp
58	to hurt		-		-		-		tʰɔ:p		tʰɔ:p
59	fishhook		-		bet		bet		bet		bet
60	raw		-		-		-		dip		dip
61	chest		-		-		-		ʔɔk		ʔɔk
62	to catch		-		-		-		kʰɔ?		-
63	bird	S-Mid-level	nɔk	S-High-level	nɔk	S-Mid-level	nɔk	S-Mid-level	nɔk	S-Mid-level	nɔk
64	to tie		-		-		-		nɑt		mɑt
65	to steal		-		-		-		lɑk		-

3.10 HTL local dialect (Table 11)

HTL is another Amphoe on the eastern border of Changwat NR (Nakhon Ratchasima), adjoining Changwat Buriram. CP, PM, and CKR are its neighbouring Amphoes. Generally, most people have been living there for generations, but there are some from other Amphoes; for example, SN. The following data in Table 11 in the following page are from the informant whose father is from A.SN



From Table 11, it will be seen that the initial consonant sound [h̃-] occur as a free variant of [h-] as in words 'ear' (1) and 'head' (3).

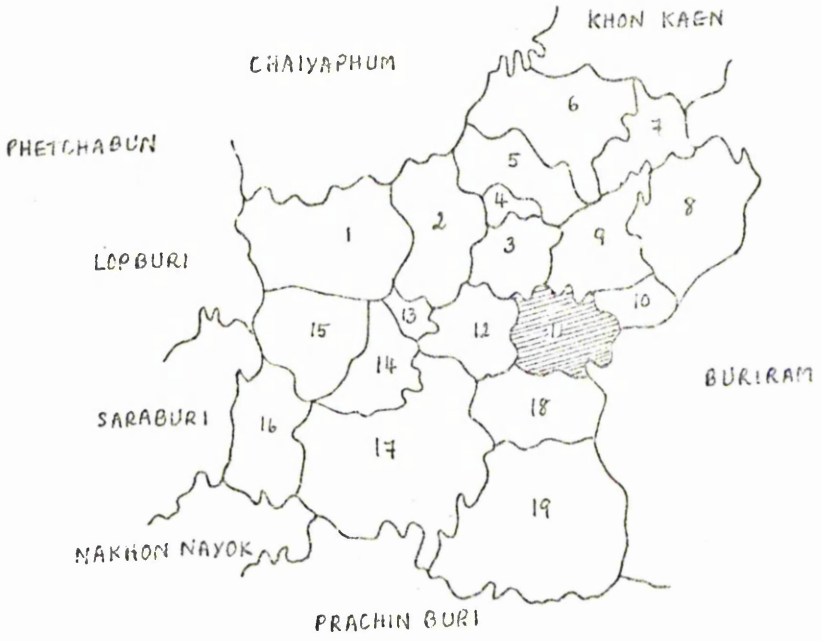
TABLE 11. HTL LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	ʰhu:
2	leg		kha:
3	head		ʰhuə
4	year	Mid-level 	pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	hand		mɯ:
11	ricefield		na:
12	egg	Low-falling 	khai
13	to split		pha:
14	knee		khau
15	forest		pa:
16	chicken		kai
17	old		kɛ:
18	shoulder		ba:
19	young man		ba:u
20	to scold		da:
21	rice		khau
22	shirt		sɯə
23	to kill		kha:
24	fever		khai
25	torn		kha:t
26	gums		ŋɯək
27	to carry-on pole		ha:p
28	lungs		pɔ:t
29	wing		pi:k
30	to pound		tɔ:k
31	sunshine		dɛ:t
32	to bathe		ʔa:p
33	flower		dɔ:k
34	older-sibling	Higher-Mid-falling 	phi:
35	father		phɔ:
36	dry field		lai
37	aunt		pa:
38	rice-seedlings		ka:
39	to boil		tom
40	crazy		ba:
41	village		ba:n
42	to open		ʔa:
43	five		hɑ:
44	water		na:m
45	younger-sibling		nɔ:ŋ
46	wood		mɑ:i
47	horse		ma:
48	knife		mi:t
49	child		lu:k
50	blood		lɥt
51	outside		nɔ:k

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
52	flea	S-High-rising 	mat
53	cooked		suk
54	vegetable		phak
55	frog		kop
56	liver		tap
57	to hurt		tɕep
58	fishhook		bet
59	raw		dip
60	chest		ʔok
61	bird	S-Mid-level 	nɔk
62	to tie		mat
63	to steal		lak

3.11 CKR local dialect (Table 12)

Chakkarat is one of the Amphoes on the eastern border of Changwat NR. Buriram, HTL, PM, NS, M, and Chock Chai are its adjacent neighbouring Changwat and Amphoes respectively.



It is interesting to note that the initial sound of words 'child' and 'blood' (49, 50) is velarized. The initial sound [kxh-] occurs as a free variant of /kh-/.

TABLE 12. CKR LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:
2	leg		kha:
3	head		huə
4	year		pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	hand	Mid-level 	mu:
11	ricefield		na:
12	egg	Low-falling 	kxhai
13	to split		pha:
14	knee		kxhau
15	forest		pa:
16	chicken		kai
17	old		kɛ:
18	shoulder		ba:
19	young man		ba:u
20	to scold		da:
21	rice		khau
22	shirt		suə
23	to kill		kha:
24	fever		khai
25	torn		kxha:t
26	gums		ŋɯək
27	to carry on pole		ha:p
28	lungs		pɔ:t
29	wing		pi:k
30	to pound		tɔ:k
31	sunshine		dɛ:t
32	to bathe		ʔa:p
33	flower		dɔ:k
34	older-sibling	High-falling 	phi:
35	father		phɔ:
36	dry field		lai
37	five		ha:
38	aunt		pa:
39	rice-seedlings		ka:
40	to boil		tom
41	crazy		ba:
42	village		ba:n
43	to open		ʔə.
44	water		na:m
45	younger-sibling		nɔ:ŋ
46	wood		ma:i
47	horse		ma:
48	knife		mi:t
49	child		ɬu:k
50	blood		ɬuət
51	outside		nɔ:k

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
52	flea	S-High-rising 	mat
53	cocked		sɯk
54	vegetable		phak
55	frog		kop
56	liver		tap
57	to hurt		tɕep
58	fishhook		bet
59	raw		dip
60	chest		ʔok
61	to catch		kɔʔ
62	bird	S-Mid-level 	nok
63	to steal		lak

3.12 M(NR) local dialect (Table 13)

A.Muang Nakhon Ratchasima is located in the centre of this Changwat and surrounded by seven other Amphoes, viz. NT, NS, CKR, CC, PTC, KTS, and DKT.

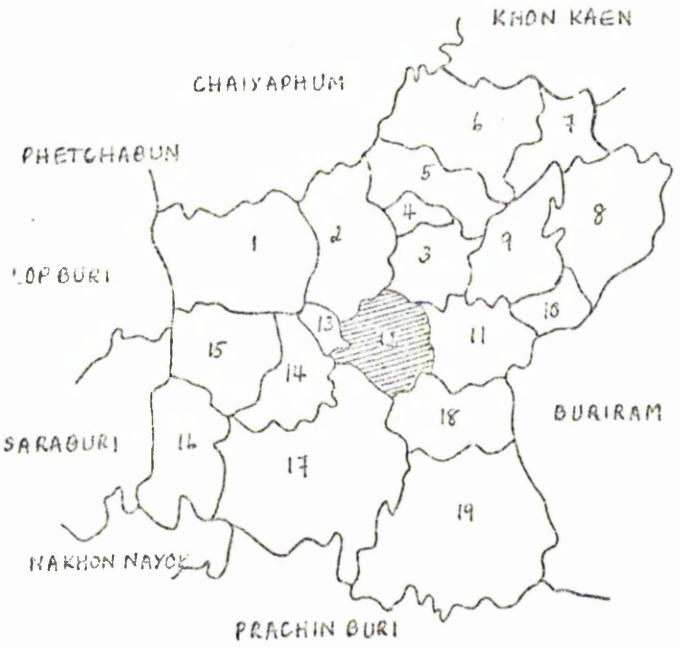


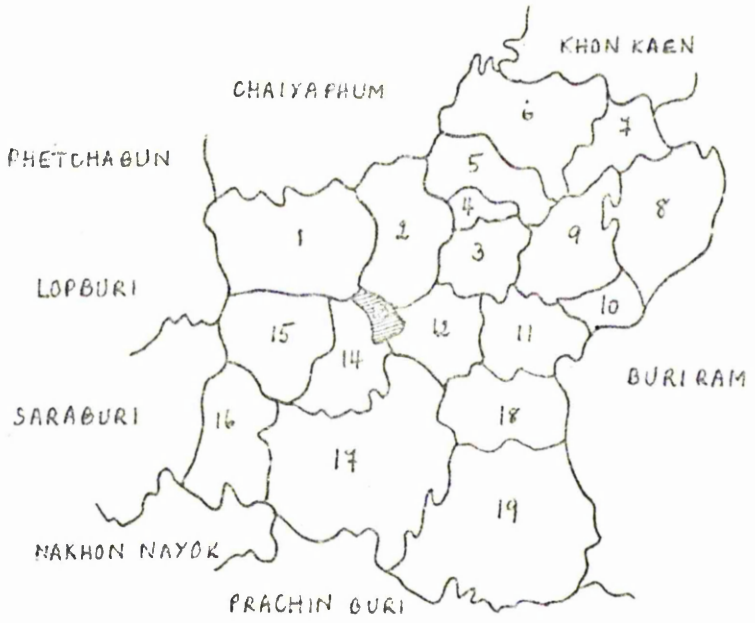
TABLE 13. M (NR) LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Lower-Mid-rising 	hu:
2	leg		kha:
3	head		huə
4	year	Mid-level 	pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star		da:u
10	hand		mɯ:
11	buffalo		khuəi
12	ricefield		na:
13	egg	Low-level 	khai
14	to split		pha:
15	knee		khau
16	forest		pa:
17	chicken		kai
18	old		kɛ:
19	shoulder		ba:
20	young man		ba:u
21	to scold		da:
22	rice		khau
23	shirt		sɯə
24	fever		khai
25	torn		kha:t
26	gums		ŋɯək
27	to carry on pole		ha:p
28	lungs		pɔ:t
29	wing		pi:k
30	to pound		tɔ:k
31	sunshine		dɛ:t
32	to bathe		ʔa:p
33	flower		dɔ:k
34	older-sibling	High-falling 	phi:
35	father		phɔ:
36	dry field		lai
37	aunt		pa:
38	rice-seedlings		ka:
39	to boil		tɔm
40	crazy		ba:
41	village		ba:n
42	to open the mouth		ʔa:
43	water		na:m
44	younger-sibling		nɔ:ŋ
45	wood		mai
46	horse		ma:
47	knife		mi:t
48	child		lu:k
49	blood		lɯət
50	outside		nɔ:k

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
51	flea	S-High-rising 	mat
52	cooked		suk
53	vegetable		phak
54	frog		kop
55	liver		tap
56	to hurt		tɕep
57	fishhook		bet
58	raw		dip
59	chest		ʔɔk
60	bird		nok
61	to tie		mat
62	to steal		lak

3.13 KTS local dialect (Table 14)

Kham Thale So is a small Amphoe located in the middle of Changwat NR next to A. Muang. Besides A. Muang, its frontiers are adjacent to A. NT, DKT, SK, and SN. Here two informants from two different Tambons were asked for their own local dialects.



It is interesting to note that the velar stop in initial position is a little bit further back in L1 as in words for example, 'leg' (2), 'egg' (13), 'knee' (15), and so on. Also, there is the occurrence of [kxh-~kh-] as in words 'rice' (22), 'fever' (25), etc. Another striking point is the pronunciation of the initial sound [dl-] in word 'blood' (51) in L2. It is always pronounced with a lateral, sometimes a velarised one, in most local dialects in this Changwat. Finally, words from 29 to 32 and 34, the pronunciation of the final sound is the glottal stop in L2.

One striking point of the pronunciation of the vowels in this Amphoe is the diphthong which occurs in words

'lung' (29), 'to pound' (31), 'flower' (34) in L2, while it is a long single vowel in L1. Also it is interesting to note that in L2 the length of the vowel in the word 'wood' (47) is not as long as long vowels elsewhere. Since the vowel in the following three words; 'shirt' (23), 'gums' (27), and 'blood' (51) is the same, namely [ɯə], in Standard Thai, which corresponds to [ɨə] in the Lao-Isan dialect, one might have expected that the vowel of the word 'shirt' (23) in L2 would be the same as in 'gums' and 'blood'; but in fact it is not. It can be reckoned either that the informant's educated pronunciation has affected his own dialect or that the surrounding Lao-Isan dialect, which covers the vast area of the northeast of Thailand, may have influenced his way of pronunciation.

TABLE 14. KTS LOCAL DIALECT

NO.	English glossary	L 1		L 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Lower-Mid-rising 	hu:	Lower-Mid-rising 	hu:
2	leg		kha:		kha:
3	head		huə		huə
4	year	Mid-level 	pi:	Mid-level 	pi:
5	eye		ta:		ta:
6	to eat		kin		kin
7	to fly		bin		bin
8	red		dɛ:ŋ		dɛ:ŋ
9	star		da:u		da:u
10	hand		mɤ:		mɤ:
11	buffalo		khuəi		-
12	ricefield		na:		na:
13	egg	Low-falling 	khai	Low-level 	khai
14	to split		pha:		pha:
15	knee		kxhau		khau
16	forest		pa:		pa:
17	chicken		kai		kai
18	old		kɛ:		kɛ:
19	shoulder		ba:		ba:
20	young man		ba:u		ba:u
21	to scold		da:		da:
22	rice		kxhau		khau
23	shirt		sɯə		sɯə
24	to kill		kxha:		-
25	fever		kxhai		khai
26	torn		-		kha:t
27	gums		-		ɲiək
28	to carry		ha:p		ha:p
29	lung		pɔ:t		pɔə?
30	wing		pi:k		pi:?
31	to pound		tɔ:k		tɔə?
32	sunshine		dɛ:t		dɛ:?
33	to bathe		?a:p		?a:p
34	flower		dɔ:k		dɔə?
35	older-sibling	High-falling 	phi:	High-falling 	phi:
36	father		phɔ:		phɔ:
37	dry field		lai		lai
38	five		ha:		ha:
39	aunt		pa:		pa:
40	rice-seedlings		ka:		ka:
41	to boil		tɑm		tɑm
42	crazy		ba:		ba:
43	village		ba:n		ba:n
44	to open-the mouth		?a:		?a:
45	water		na:m		na:m
46	younger-sibling		nɔ:ŋ		nɔ:ŋ
47	wood		ma:i		ma•i
48	horse		-		mɑ:

TABLE 14. KTS LOCAL DIALECT (cont.)

NO.	English glossary	L 1		L 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
49	knife		mi:t		mi:t
50	child		ɬu:k		lu:k
51	blood		ɬɯət		dliət
52	outside		nɔ:k		nɔ:k
53	flea	S-Higher-Mid-rising	mat	S-Low-level	mat
54	cooked		suk		suk
55	vegetable		phak		phak
56	frog		kop		kop
57	liver		tap		tap
58	to hurt		tɕep		tɕep
59	fishhook		bet		bet
60	raw		dip		dip
61	chest		ʔok		ʔok
62	bird	S-Mid-level	nok	S-High-level	nok
63	to tie		mat		mat
64	to steal		lak		lak

L 1 = T Muang

L 2 = T Phan Dung

3.14 SN local dialect (Table 15)

Amphoe Sung Noen is surrounded by other Amphoes, that is, SK, KTS, M, PTC.

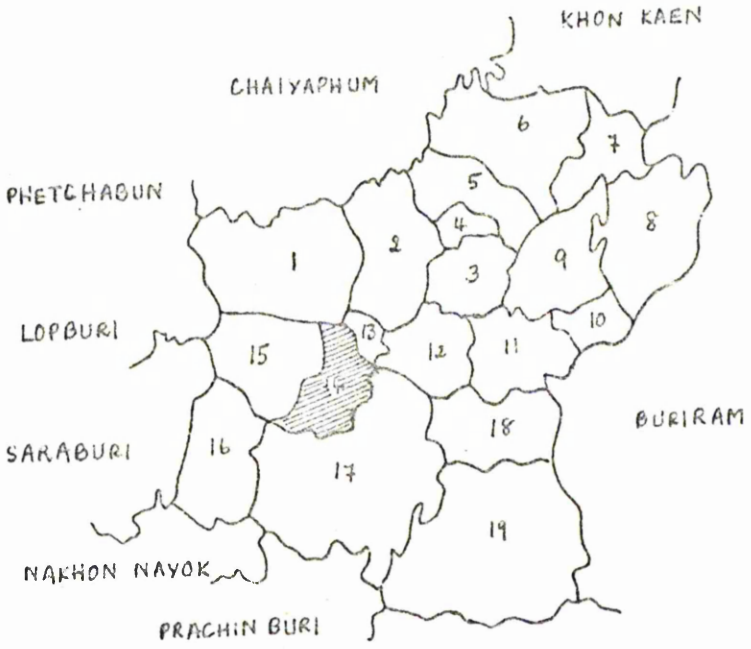


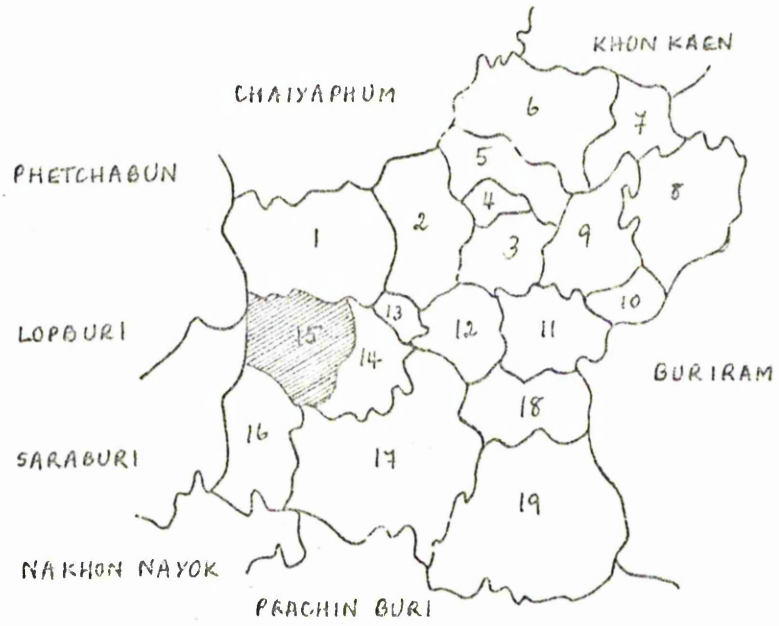
TABLE 15. SN LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	ʔhu:
2	leg		kxha:
3	head		ʔhuə
4	year		pi:
5	eye		ta:
6	to eat		kin
7	to fly		bin
8	red		dɛ:ŋ
9	star	Mid-level 	da:u
10	hand		mɯ:
11	ricefield		na:
12	egg	Low-falling 	khai
13	to split		pha:
14	knee		khau
15	forest		pa:
16	chicken		kai
17	old		kɛ:
18	shoulder		ba:
19	young man		ba:u
20	to scold		da:
21	rice		khau
22	shirt		suə
23	to kill		kha:
24	fever		khai
25	five		ha:
26	torn		kha:t
27	gums		ŋɯək
28	to carry on pole		ha:p
29	lungs		pɔ:t
30	wing		pi:k
31	to pound		tɔ:k
32	sunshine		dɛ:t
33	to bathe		ʔa:p
34	flower		dɔ:k
35	older-sibling	High-falling 	phi:
36	father		phɔ:
37	dry field		lai
38	aunt		pa:
39	rice-seedling		ka:
40	to boil		tom
41	crazy		ba:
42	village		ba:n
43	to open the mouth		ʔa:
44	water		na:m
45	younger-sibling		nɔ:ŋ
46	wood		ma:i
47	horse		ma:
48	knife		mi:t
49	child		lu:k
50	blood		luət
51	outside		nɔ:k

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
52	flea	S-Higher-Mid-rising 	mat
53	cooked		suk
54	vegetable		phak
55	frog		kop
56	liver		tap
57	to hurt		tɕep
58	fishhook		bet
59	raw		diˀ
60	chest		ʔok
61	bird	S-Higher-Mid-level 	nɔk
62	to tie		mat
63	to steal		lak

3.15 SK local dialect (Table 16)

A. Sikhiu is located in the western area of this Changwat surrounded by Changwat Lopburi, A. DKT, KTS, SN, PTC, and PC. Two different Tambons of this Amphoe have been investigated.



The striking point is that the glottalised bilabial voiced stop which is rarely found in modern Thai dialects is pronounced initially in the word 'to fly' in L2. Nasalisation cooccurs with the initial glottal fricative sound as in word 'ear' (1) in L1.

TABLE 16. SK LOCAL DIALECT

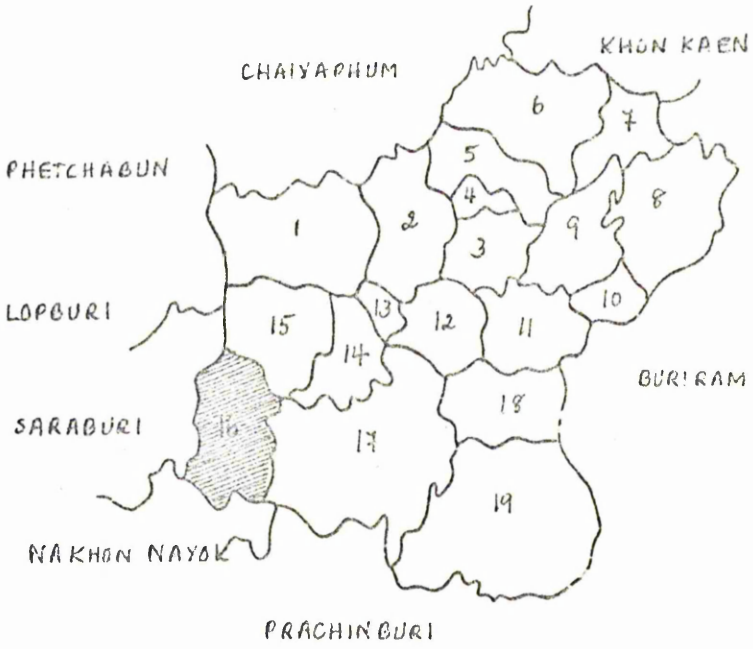
NO.	English glossary	L 1 Pitch pattern and label	L 1 Phonetic transcript.	L 2 Pitch pattern and label	L 2 Phonetic transcript.
1	ear	Low-rising 	ʔhu:	Low-rising 	hu:
2	leg		kha:		-
3	year		pi:	Mid-level 	pi:
4	eye		ta:		-
5	to fly		bin		bin
6	hand	High-level 	mɯ:		mɯ:
7	ricefield		na:		-
8	egg		kxhai	Low-falling 	khai
9	forest		pa:		pa:
10	shoulder		ba:		ʔba:
11	rice	Low-level 	khau		khau
12	fever		khai		-
13	torn		kha:t		kha:t
14	lung		pɔ:t		pɔ:t
15	sunshine		dɛ:t		dɛ:t
16	older sibling	Mid-level 	phi:	High-falling 	phi:
17	father		phɔ:		-
18	aunt	High-falling 	pa:		pa:
19	crazy		ba:		ba:
20	younger sibling		-		-
21	knife		mi:t		mi:t
22	water		na:m		na:m
23	flea	S-Low-level 	mat	S-Higher-mid-rising 	mat
24	cooked		suk		-
25	vegetable		phak		-
26	frog		kop		kop
27	liver		tap		-
28	fishhook		bet		bet
29	raw		dip		-
30	to hurt		tɕep		-
31	bird	S-High-level 	nok	S-Mid-level	nok

L 1 = T Ban Han

L 2 = T Muang

3.16 PC local dialect (Table 17)

Sikhiu and Pak Thong Chai are adjacent Amphoes (A) of A. PTC which also borders on Changwat Nakhon Nayok and Saraburi. Most of the people who come here for the temporary work in the fields are from Changwat Udon Thani. The informant's father moved from Changwat Chaiyaphum to this Amphoe in Changwat NR.



It is interesting to note that the vowels in the words 'lungs' (14) and 'sunshine' (15) are glided towards the more central one [ə]. So we have diphthongs [ɔə] and [ɛə] in words 'lungs' and 'sunshine' respectively.

TABLE 17. PC LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	ɲ̃u:
2	leg		kha:
3	year	Mid-level	pi:
4	eye		ta:
5	to fly		bin
6	red		dɛ:ŋ
7	hand		mɯ:
8	rice field		na:
9	egg	Low-falling	khai
10	knee		khau
11	forest		pa:
12	shoulder		ba:
13	torn		kha:t
14	lung		pɔət
15	sunshine		dɛət
16	older sibling	High-falling	phi:
17	father		phɔ:
18	rice		kha:u
19	aunt		pa:
20	crazy		ba:
21	knife		mi:t
22	water	High-level 	na:m
23	flea	S-Lower-Mid-level	mat
24	cooked		suk
25	frog		kop
26	liver		tap
27	to hurt		tɕep
28	raw		dip
29	bird	S-High-rising 	nok

3.17 PTC local dialect (Table 18)

Amphoe Pak Thong Chai is situated in the southern part of Changwat Nakhon Ratchasima, adjoining two other Changwats; Nakhon Nayok and Prachin Buri. It is also surrounded by A.KB, CC, M, SN, SK, and PC.

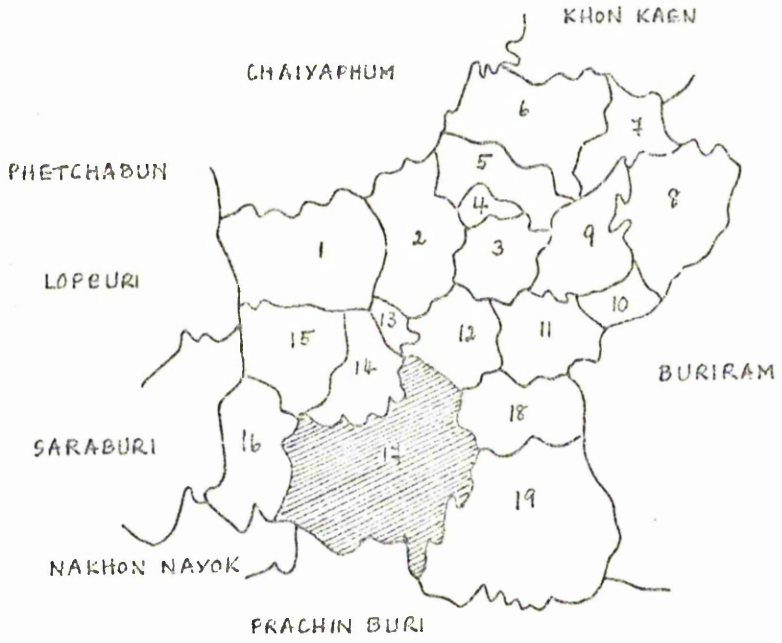


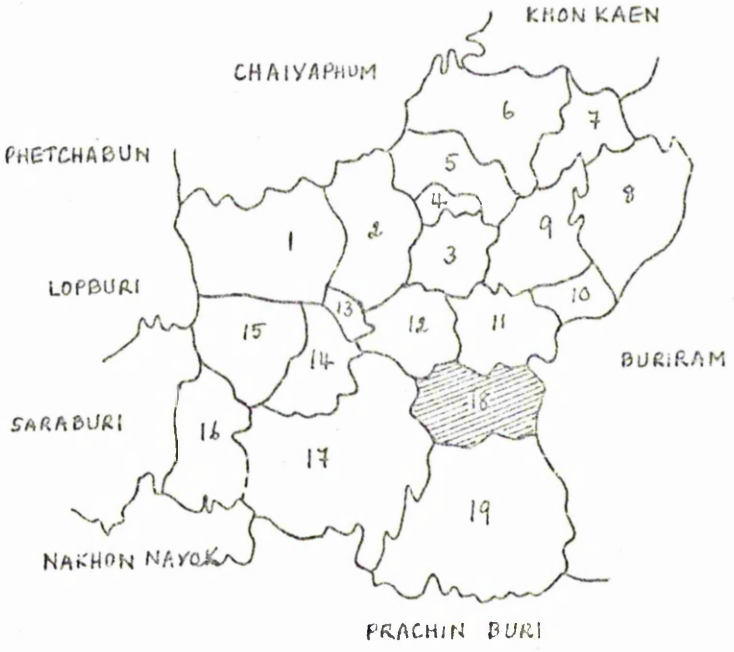
TABLE 18. PTC LOCAL DIALECT

NO.	English glossary	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:
2	leg		kha:
3	year	Mid-level 	pi:
4	eye		ta:
5	to fly		bin
6	red		dɛ:ŋ
7	hand		mɯ:
8	egg	Low-falling 	khai
9	forest		pa:
10	shoulder		ba:
11	rice		khau
12	torn		kha:t
13	lung		pɔ:t
14	sunshine		dɛ:t
15	older sibling	High-falling 	phi:
16	father		phɔ:
17	aunt		pa:
18	crazy		ba:
19	water		na:m
20	knife		mi:t
21	flea	S-High-rising 	mat
22	frog		kop
23	fishhook		bet
24	bird	S-Mid-level 	nok

3.18 CC local dialect (Table 19)

Geographically, this Amphoe is situated on the eastern border of this Changwat, adjoining Changwat Buriram on the east and another four Amphoes; that is, CKR and M on the north, PTC on the west and KB on the south. Most people have been there for generations, but still there are some moving from other Amphoes, for example, from KB.

Two informants from two different Tambons were asked to pronounce their own local dialects.



One of the striking points to note is that the final sound of the word 'gums' (27) is the glottal stop in L2, while it is the velar stop in L1.

The vowels [ɔ] and [ɛ] are a little bit closer in L2 as in words 'to pound' (31), 'sunshine' (32), 'flower' (34), and 'father' (36). Moreover, the vowels of the words 'lungs' and 'sunshine' (29, 32) are diphthongs [ɔə] and [ɛə] , while they are long single vowels [ɔ:] and [ɛ:] in L1.

TABLE 19. CC LOCAL DIALECT

NO.	English glossary	L 1		L 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
1	ear	Low-rising 	hu:	Lower-Mid-rising 	hu:
2	leg		kha:		kha:
3	head		huə		huə
4	year	Mid-level 	pi:	Mid-level 	pi:
5	eye		ta:		ta:
6	to eat		kin		kin
7	to fly		bin		bin
8	red		dɛ:ŋ		dɛ:ŋ
9	star		da:u		da:u
10	hand		mɯ:		mɯ:
11	buffalo		ʔ–		khuəi
12	ricefield		na:		na:
13	egg	Low-falling 	khai	Low-falling 	khai
14	to split		pha:		pha:
15	knee		khau		khau
16	forest		pa:		pa:
17	chicken		kai		kai
18	old		kɛ:		kɛ:
19	shoulder		ba:		ba:
20	young man		ba:u		ba:u
21	to scold		da:		da:
22	rice		khau		khau
23	shirt		sɯə		sɯə
24	to kill		kha:		kha:
25	fever		khai		khai
26	torn		kha:t		kha:t
27	gums		ŋɯək		ŋɯəʔ
28	to carry on pole		ha:p		ha:p
29	lungs		pɔ:t		pɔət
30	wing		pi:k		pi:k
31	to pound		tɔ:k		tọ:k
32	sunshine		dɛ:t		dẹət
33	to bathe		ʔa:p		ʔa:p
34	flower		dɔ:k		dọ:k
35	older-sibling	High-falling 	phi:	High-falling 	phi:
36	father		phɔ:		phọ:
37	dry field		lai		lai
38	five		ha:		ha:
39	aunt		pa:		pa:
40	rice-seedlings		ka:		ka:
41	to boil		tɔm		tɔm
42	crazy		ba:		ba:
43	village		ba:n		ba:n
44	to open		ʔa:		ʔa:
45	water		na:m		na:m
46	younger-sibling		nɔ:ŋ		nɔ:ŋ
47	wood		ma:i		ma:i
48	horse		ma:		ma:
49	knife		mi:t		mi:t
50	child		lu:k		lu:k

TABLE 19. CC LOCAL DIALECT (cont.)

NO.	English glossary	L 1		L 2	
		Pitch pattern and label	Phonetic transcript.	Pitch pattern and label	Phonetic transcript.
51	blood		luət		luət
52	outside		nɔ:k		nɔ:k
53	flea	S-High-rising	mat	S-High-rising	mat
54	cooked	⊢	suk	⊢	suk
55	vegetable		phak		phak
56	frog		kop		kop
57	liver		tap		tap
58	to hurt		tɕep		tɕep
59	fishhook		bet		bet
60	raw		dip		dip
61	chest		ʔok		ʔok
62	bird		nok	S-Mid-level	nok
63	to tie		mat	⊢	mat
64	to steal		lak		lak

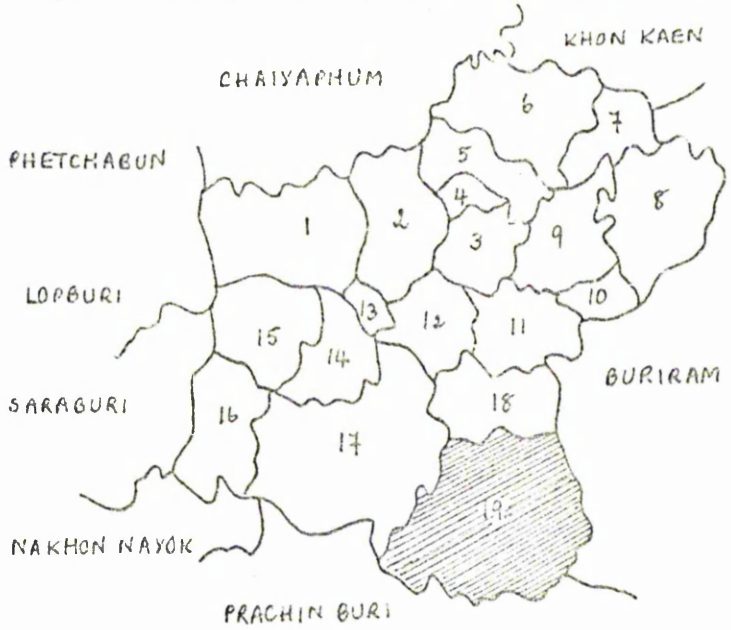
L 1 = T. Muang

L 2 = T. Nguan Kratboke

3.19 KB local dialect (Table 20)

A KB is situated on the southern area of Changwat NR. It borders on two other Changwats ; Prachin Buri and Buriram, and the other two Amphoes ; CC and PTC.

Four informants from three different Tambons have been asked to give the pronunciation of their own local dialects.



In this Amphoe, two forms of vowel are found in the words 'lungs' (29) and 'sunshine' (32). That is, [ɔ:] or [ɔə] in 'lungs' and [ɛ:] or [ɛə] in 'sunshine'. Also it is interesting to note that the length of the vowel in L3 as in the word 'water' (45) is shorter than the long vowel elsewhere. Moreover, two variants of the vowel sound in the word 'shirt' (23) appear. That is [ɯə] in L2 and [ɨə] in L3. Furthermore, the vowel sound [ia] occurs in L3 as in the word 'gums' (27).

For the consonant sounds, one of the striking points is the glottalised sound which occurs initially in the word 'shoulder' (19) in L3; while it is the plain voiced sound in all the other local dialects in this Amphoe. Another interesting thing in this locality (L3) is the initial sound in the word 'gums' (27) ; it is the palatal nasal while in L2 it is a velar nasal.

TABLE 20 KB LOCAL DIALECT

No.	English Glossary	L. 1 Pitch pattern and label	L. 1 Phonetic transcript.	L. 2 Pitch pattern and label	L. 2 Phonetic transcript.	L. 3 Pitch pattern and label	L. 3 Phonetic transcript.	L. 4 Pitch pattern and label	L. 4 Phonetic transcript.
1	ear	Low-rising:	ʔu:	Low-rising:	hu:	Low-rising:	hu	Low-rising:	hu:
2	leg	˩˧	-	˩˧	khu:	˩˧	khu:	˩˧	khu:
3	head		hua		hua		hua		-
4	year	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:	Mid-level	pi:
5	eye		ta:		ta:		ta:		-
6	to eat	˧	-	˧	kin	˧	kin	˧	kin
7	to fly		bin		bin		bin		bin
8	nail		dɔŋ		dɔŋ		dɔŋ		dɔŋ
9	star		-		dɔ:u		dɔ:u		-
10	hand		mɯ:		mɯ:		mɯ		mɯ:
11	buffalo		-		khwi		khwi		-
12	rice-field		-		nɑ:		nɑ:		-
13	eye	Low-falling:	khai	Low-falling:	khai	Low-falling:	khai	Low-falling:	khai
14	to split		-		phɑ:		phɑ:		phɑ:
15	knee	˩˨	-	˩˨	khau	˩˨	khau	˩˨	khau
16	forest		pɔ:		pɔ:		pɔ:		pɔ:
17	chicken		-		kai		kai		-
18	old		-		kɔ:		kɔ:		-
19	shoulder		ba:		ba:		ʔba:		ba:
20	young man		-		-		ba:u		-
21	to scold		da:		da:		da:		da:
22	rice		khau		khau		khau		khau
23	shirt		-		sɯ:		sɯ:		-
24	to kill		kha:		kha:		kha:		kha:
25	fever		khai		khai		khai		-
26	torn		kha:t		kha:t		ʔha:t		kha:t
27	guns		-		ŋuk		ŋuk		-
28	to carry on pole		-		ha:p		ha:p		-
29	lungs		pɔ:t		pɔ:t		pɔ:t		pɔ:t
30	wing		pi:k		pi:k		pi:k		pi:k
31	to pound		-		tɔ:k		tɔ:k		-
32	sunshine		dɑ:t		dɑ:t		dɑ:t		dɑ:t
33	to bath		-		ʔa:p		ʔa:p		-
34	flower		-		dɔ:k		dɔ:k		-
35	older-sibling;	High-falling:	phi:	Higher-Mid-falling:	phi:	High-falling:	phi:	High-falling:	phi:
36	father	˥˩	phɔ:	˥˩	phɔ:	˥˩	phɔ:	˥˩	phɔ:
37	dry field		-		lai		lai		-
38	five		-		-		ha:		-
39	aunt		pa:		pa:		pa:		pa:
40	rice-seedlings		-		ka:		ka:		-
41	to boil		-		tom		tom		-
42	crazy		ba:		ba:		ba:		ba:
43	village		-		ban		ban		-
44	to open		-		ʔa:		ʔa:		-
45	water		na:m		na:m		na:m		na:m
46	younger-sibling;		-		nɔ:ŋ		nɔ:ŋ		-
47	wood		-		mɯ:i		mɯ:i		-
48	horse		-		mɯ:		mɯ:		-
49	knife		mi:t		mi:t		mi:t		mi:t
50	child		-		luk		luk		-
51	blood		-		lwat		lwat		-
52	outside		-		nɔ:k		-		-
53	flea	S-High-rising:	mɤt	S-High-rising:	mat	S-High-rising:	mɤt	S-High-rising:	mɤt
54	vegetable	˦˥	-	˦˥	phɑk	˦˥	phɑk	˦˥	-
55	frog		-		kɛp		kɛp		kɛp
56	cooked		suk		suk		-		suk
57	liver		tap		tap		tap		-
58	to hurt		-		tɕɛp		tɕɛp		-
59	fishhook		bet		bet		bet		bet
60	raw		-		dip		ʔɔk		-
61	chest		-		ʔɔk		-		-
62	to catch hold on		-		kɔ?		-		-
63	bird	S-Mid-level	nɔk	S-Mid-level	nɔk	S-Mid-level	nɔk	S-Mid-falling:	nɔk
64	to tie	˦	-	˦	mat	˦	mat	˦˩	-
65	to steal		-		lak		lak		-

L. 1 = T Chaw
L. 2 = T Muang (Khon Kaen)
L. 3 = T Chiefland
L. 4 = T So-ta-khian

CHAPTER 4

TONE SYSTEMS AND THEIR REALISATIONS : CORRELATION OF PITCH PATTERNS WITH SYLLABLE STRUCTURES WITHIN LOCAL DIALECTS

The syllable structures of monosyllabic words of Tai dialects fall within the following types :-

1. CVV — an initial consonant followed by a long vowel, a diphthong, or a triphthong; such as /ma:/ 'to come'; /pai/ 'to go'; /ruai/ 'rich' in the standard dialect.

2. CCVV — an initial consonant cluster followed by a long vowel, a diphthong, or a triphthong. For example, /pla:/ 'fish'; /khwa:i/ 'buffalo'; /priâu/ 'sour' in Standard Thai (ST).

3. CVS — an initial consonant followed by a short vowel and ending with a voiceless stop such as in ST /mât/ 'to tie'.

4. CVN — an initial consonant followed by a short vowel and ending with a nasal such as /man/ 'greasy' in ST.

5. CCVC — an initial consonant cluster followed by a short vowel and ending with a voiceless stop such as /pràp/ 'to fine' in ST.

6. CCVN — an initial consonant cluster followed by a short vowel and ending with a nasal, such as /kron/ 'to snore' in ST.

7. CVVS — an initial consonant followed by a long vowel or a diphthong and ending with a voiceless stop, such as /khà:t/ 'torn' in Standard Thai.

8. CVVN — an initial consonant followed by a long vowel or a diphthong and ending with a nasal such as /ca:n/ 'dish'; /ruam/ 'to

group' in ST.

9. CCVVC — an initial consonant cluster followed by a long vowel or a diphthong and ending with a voiceless stop such as /kwà:t/ 'to sweep'; /trùat/ 'to check' in the standard dialect.

10. CCVVN — an initial consonant cluster followed by a long vowel or a diphthong and ending with a nasal such as /khla:n/ 'to crawl'; /truan/ 'to chain' in the standard dialect.

It is worth mentioning here that the Thai dialects in the northeastern part of Thailand, so-called Lao-Isan in this thesis, have no syllable structure types 2, 5, 6, 9, and 10. That is, initial consonant clusters do not occur in these dialects.

It is found that in Tai languages there are frequently restrictions upon the tones that may occur with given syllable types. The factors affecting such restrictions are

(a). The nature of the final consonant

(b). Vowel length

(c). The nature of the initial consonant

(a). Final consonant and tonal restrictions

From this point of view it is convenient to classify syllables into two types :-

1. Smooth syllables are those ending in a sonorant, that is, a vowel or a nasal. Thus, the syllable structure types 1, 2, 4, 6, 8, and 10 fall into this category.

2. Checked syllables are those ending in an obstruent, which is always a voiceless unaspirated plosive. So the syllable structure types 3, 5, 7, and 9 are of checked syllable type.

(b). Vowel length and tonal restrictions

Within checked syllables, there may be further restrictions, depending upon whether the vowel is long or short. For example, in the standard dialect, checked syllables with short vowels may only occur with high and low tones as in /mát/ 'to tie' and /màt/ 'flea' respectively. Checked syllables with long vowels may only occur with low and falling tones as in /mà:t/ 'dampish' and /mâ:t/ 'to act' respectively.

(c). Initial consonant and tonal restrictions

Initial consonants may be divided into two types, according to their correlation with pitch patterns as follows:

Type 1 includes aspirated plosives, fricatives, and sonorants. The members of these classes may for example occur as initial consonants with all the pitch patterns which occur in individual local dialects in Changwat Nakhon Ratchasima; but there are some restrictions with some southern Thai dialects for instance in Phuket dialect.

Type 2 includes unaspirated voiced and voiceless plosives (including the glottal stop). In most dialects not all the pitch patterns can occur with this consonant type. Likewise, they are restricted differently in different local dialects.

Since the main emphasis in this study is on tones, as realised by pitch patterns, not all possible initial and final consonants in both syllable types were elicited in each local dialect. It was felt sufficient to elicit syllables containing example of both initial consonant types and of both final consonant types. All possibilities were however elicited for the K (Khong) local dialect, as demonstrated in Tables 4i, 4ii, 4iii, and 4iv.

It will be seen that there are three kinds of squares in the following tables which need to be described in order to be able to read and understand them :-

1. A blank square specifies that no ~~words may occur with~~ this particular pitch pattern occurs in this local dialect but not in this particular context.

2. A square with diagonal lines specifies that the pitch pattern indicated ~~may~~ does not occur in this ~~context~~ local dialect

3. A square with a tick indicates that though no word was elicited in this environment, it is anticipated from the phonological pattern of the dialect concerned that such words may occur.

Table 4i. Correlation of Initial Consonants and Pitch Patterns of K Local dialect

Init. cons. \ Pitch patterns		1. Low-rising	2. Mid-level	3. Low-level	4. High-falling	5. S-High-rising	6. S-High-level
CONSONANT TYPE 1	ph-	phom 'hair'	phɛ: 'raft'	pha: 'to split'	phai 'daughter-in-law'	phak 'vegetable'	phap 'to fold'
	th-	thai 'to plough'	thian 'candle'	thua 'bean'	thau 'ashes'	that 'next to'	thop 'to fold'
	kh-	kha: 'leg'	kha: 'dangled'	kha:t 'torn'	kha: 'to trade'	khat 'to scour'	khot 'bent'
	tɕh-		tɕhay 'to hate'	tɕhi:k 'to fear'	tɕhai 'to use'		tɕhok 'to punch'
	m-	ma: 'dog'	ma: 'to come'	mai 'burn'	mai 'wood'	mat 'flea'	mat 'to tie'
	n-	na:m 'thorn'	na: 'riecfield'	nɔ: 'a sprout'	nay 'to sit'	nak 'heavy'	nok 'bird'
	ŋ-	ŋɔ:n 'cockscomb'	ŋu: 'snake'	ŋɔ:k 'greyish hair'	ŋa:i 'easy'	ŋut 'nervous'	ŋap 'to bite'
	f-	fa: 'lid'	fai 'fire'	fa: 'cloud'	fa: 'sky'	fak 'pod'	fak 'to incubate'
	s-	sai 'clear'	sai 'banyan'	sai 'to put'	sa:i 'left'	suk 'cooked'	sak 'to wash'
	h-	ha: 'to seek'		ha:n 'goose'	ha: 'five'	het 'mushroom'	
	j-	ja:m 'to insult'	ja: 'medicine'	ja: 'grass'	ja: 'paternal grandmother'	jot 'a classifier for water'	jok 'to raise'
	l-	lai 'to flow'	la:i 'stripe'	lɔ:t 'spool'	lai 'to chase'	lek 'iron'	lak 'to steal'
	w-	wa:n 'sweet'	we:n 'yesterday'	wa:t 'to fear'	wai 'to put away'	wat 'a cold'	wat 'to measure'

Table 4i. Correlation of Initial Consonants and Pitch Patterns of K Local Dialect (Cont.)

	Pitch patterns / Init. cons.	1. Low-rising	2. Mid-level	3. Low-level	4. High-falling	5. S-High-rising	6. S-High level
CONSONANT TYPE 2	p-	pa: 'fish'		pa: 'forest'	pa: 'aunt'	pot 'to remove'	
	t-	ta: 'eye'		tɛ:k 'broken'	tom 'to boil'	tak 'to dip out'	
	k-	ka:ŋ 'middle'		kai 'chicken'	kɛ:m 'cheek'	kop 'frog'	
	ʔ	ʔau 'to take'		ʔa:p 'to bathe'	ʔa: 'to open the mouth'	ʔɔk 'chest'	
	tɕ-	tɕu:ŋ 'to lead by hand'		tɕi:p 'to pleat'	tɕim 'to pick'	tɕep 'hurt'	
	b-	bin 'to fly'		bɔ: 'well'	ba: 'crazy'	bɔt 'fishhook'	
	d-	da:u 'star'		da: 'to scold'	da:m 'handle'	duk 'late at night'	

Table 4ii. Correlation of Pitch Patterns with Vowel Length and Final Consonants of K Local Dialect

	Pitch patterns / Vowel Length	1. Low-rising	2. Mid-level	3. Low-level	4. High-falling	5. S-High-rising	6. S-High level	FINALS
SMOOTH SYLLABLES		hu: 'ear'	na: 'ricefield'	pha: 'to split'	mai 'wood'			V
	SV	phom 'hair'	kham 'word'	tam 'low'	kham 'night fall'			-m
	LV	phɔ:m 'thin'	kha:m 'indigo'	dɯ:m 'to drink'	khǎ:m 'to cross'			
	SV	bin 'to fly'	wan 'day'	han 'to slice'	khon 'to search'			-n
	LV	ti:n 'foot'	wa:n 'yesterday'	ha:n 'goose'	khɔ:n 'to get rid of'			
	SV	piŋ 'leech'	faŋ 'to listen'	beŋ 'to strain'	tɕhaŋ 'to weigh'			-ŋ
	LV	dɔ:ŋ 'to pickle'	fa:ŋ 'straw'	ba:ŋ 'flying squirrel'	tɕhǎŋ 'elephant'			
CHECKED SYLLABLES	SV					ʔap 'stale'	khap 'tight'	-p
	LV			ʔa:p 'to bathe'	khá:p 'to hold in the mouth'			
	SV					khut 'to dig'	khot 'bent'	-t
	LV			khu:t 'to scrape'	khɔ:t 'ancestor'			
	SV					duk 'a kind of fish'	lak 'to steal'	-k
	LV			du:k 'bone'	la:k 'to drag'			
	SV					pɛʔ 'to mend'	phɔʔ	-ʔ
	LV							

SV = Short vowel
LV = Long vowel

Table 4iii. Correlation of Initial Consonant Type 1, Vowel Length, and Final Consonants with Pitch Patterns of K Local Dialect

	Pitch patterns / Init. cons. type 1& V. length	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-rising	6.S-High level	FINALS
SMOOTH SYLLABLES		hu: 'ear'	na: 'ricefield'	pha: 'to split'	mai 'wood'			V
	SV	phom 'hair'	kham 'word'	ham 'to chop'	kham 'night fall'			-m
	LV	phɔ:m 'thin'	kha:m 'indigo'	ha:m 'unripe'	na:m 'water'			
	SV	khon 'body hair'	wan 'day'	han 'to slice'	khon 'to search'			-n
	LV	khɛ:n 'arm'	wa:n 'yesterday'	ha:n 'goose'	khɔ:n 'to get rid of'			
	SV	suŋ 'to pile up'	faŋ 'to listen'	phuŋ 'bee'	tɕan 'to weigh'			-ŋ
	LV	su:ŋ 'tall'	fa:ŋ 'straw'	kha:ŋ 'spinning top'	tɕa:ŋ 'elephant'			
CHECKED SYLLABLES	SV					hap 'to close'	khap 'tight'	-p
	LV			ha:p 'to carry on pole'	kha:p 'to hold in the mouth'			
	SV					mat 'flea'	khot 'bent'	-t
	LV			ma:t 'dry'	kho:t 'ancestor'			
	SV					hok 'six'	lak 'to steal'	-k
	LV			hɔ:k 'spear'	la:k 'to drag'			
	SV					phuʔ 'decayed'	phɔʔ 'father'	-ʔ
	LV							

SV = Short vowel
LV = Long vowel

Table 4iv. Correlation of Initial Consonant Type 2, Vowel Length, and Final Consonants with Pitch Patterns of K Local Dialect

	Init. cons. type 2 & V. length	1. Low-rising	2. Mid-level	3. Low-level	4. High-falling	5. S High-rising	6. S-High level	FINALS
SMOOTH SYLLABLES		pa: 'fish'		pā: 'forest'	pá: 'aunt'			V
	SV	tɓom 'to sink'		tam 'low'	?um 'to carry in the arms'			-m
	LV	tɓɔ:m 'peak'		dɯ:m 'to drink'	da:m 'handle'			
	SV	bin 'to fly'		pen 'to be, become'	pan 'to mould'			-n
	LV	ti:n 'foot'		kɔ:n 'before'	ba:n 'village'			
	SV	piŋ 'leech'		taŋ 'stool'	kuŋ 'shrimp'			-ŋ
	LV	dɛ:ŋ 'red'		ta:ŋ 'various'	tɓa:ŋ 'to hire'			
CHECKED SYLLABLES	SV					?ap 'stale'		-p
	LV			?a:p 'to bathe'				
	SV					det 'to pluck'		-t
	LV			dɛ:t 'sunshine'				
	SV					puk 'to wake'		-k
	LV			pu:k 'to plant'				
	SV					pa? 'to mend'		-?
	LV							

SV = Short vowel
LV = Long vowel

4.1 DKT local dialect (Tables 4.1a and b)

Final consonant and tonal restrictions As can be seen from Table 4.1a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with checked long vowel syllables while only pitch patterns 5 and 6 may occur with short vowels on checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.1b, all six pitch patterns may occur with initial consonant type 1, but only pitch patterns 2, 3, 4, and 5, may occur with initial consonant type 2.

It should be noticed that the pitch patterns here labelled 5 and 6 each have two forms in free variation, one of these variants being common to both patterns. It may be speculated whether these forms are perhaps in process of merging tonally. They are kept seperate here since there is still a potential contrast in that although words like mat 'flea' and mat 'to tie up' may both be pronounced on occasion with S-High-level pitch, the first has an alternative pronunciation with S-Low-level pitch, while the second has an alternative pronunciation with S-Mid-level pitch : mat 'flea' is never pronounced S-Mid-level pitch, and mat 'to tie' is never pronounced S-Low-level pitch.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and4. Since these

patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables present a slightly more difficult problem, since they may be pronounced with S-High-level pitch which does not correspond to any of the patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided that short checked syllables which may vary between S-High-level/S-Low-level (pitch pattern 5) will be regarded as exhibiting short realisations of tone 3. while syllables which may vary between S-Mid-level/S-High-level (pitch pattern 6) are regarded as exhibiting short realisations of tone 2.

To recapitulate The DKT local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level) on smooth syllables and as pitch pattern 6 S-Mid-level varying with S-High-level) on short checked syllables. On short checked syllables the initial consonants are always of type 1

Tone 3 is realised as pitch pattern 3 (Low-level) on smooth syllables and long checked syllables, and as pitch pattern 5 (S-High-level varying with S-Low-level) on short checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables.

It will be seen that in this dialect there may be overlapping of the realisations of the tones of short checked syllables.

Table 4.1a Correlation of Pitch Patterns with Syllable Types and Vowel Length of DKT

Pitch patterns / Syll. Types & Vowel Length	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-level/S-Low-level	6.S-Mid-level/S High-level
SMOOTH	hu: 'ear'	kin 'to eat'	phɤ: 'to split'	lai 'dry field'		
SHORT CHECKED					mat 'flea'	mat 'to tie'
LONG CHECKED			pi:k 'wing'	mi:t 'knife'		

Table 4.1b Correlation of Initial Consonant Types and Pitch Patterns

Pitch pattern / Init. Cons. Types	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-level/S-Low-level	6.S-Mid-Level/S-High-level
TYPE 1	hu: 'ear'	khuai 'buffalo'	khai 'egg'	phɔ: 'older sibling'	phak 'vegetable'	nok 'bird'
TYPE 2		pi: 'year'	ba:u 'young man'	ka: 'rice seedling'	tap 'liver'	

4.2 NT local dialect (Tables 4.2a and b)

Final consonant and tonal restrictions As can be seen from Table 4.2a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.2b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that S-High-rising pitch (pitch pattern 6) will be regarded as a conditioned variant of Tone 4. The conditioning factor is

whether the syllable is short and checked. S-Low-level (pitch pattern 5) is regarded as a short variant of Tone 3.

To recapitulate The NT local dialect may be regarded as having four Tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) and is restricted to smooth syllables.

Tone 3 is realised as pitch pattern 3 or 5 (Low-level pitch) on smooth syllables, checked syllables, and on short checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables, and as pitch pattern 6 (S-High-level pitch) on short checked syllables.

Table 4.2a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of NT

Pitch patterns / Syllable Types & Vowel Length	1. Low-rising 	2. Mid-level 	3. Low-level 	4. High-falling 	5. S-Low-level 	6. S-High rising 
SMOOTH	kha: 'leg'	bin 'to fly'	pa: 'forest'	tom 'to boil'		
SHORT CHECKED					tɸep 'hurt'	lak 'to steal'
LONG CHECKED			do:k 'flower'	no:k 'outside'		

Table 4.2b. Correlation of Initial Consonant Types and Pitch Patterns

Pitch / Init. pattern / Consonant Types	1. Low-rising	2. Mid-level	3. Low-level	4. High-falling	5. S-Low-level	6. S-High-rising
TYPE 1	hu: 'ear'	khuai 'buffalo'	khau 'knee'	phi: 'older sibling'	mat 'flea'	nok 'bird'
TYPE 2		pi: 'year'	pa: 'forest'	ba: 'shoulder'	tap 'liver'	

4.3 NS local dialect (Tables 4.3a and b)

Final consonant and tonal restrictions As can be seen from Table 4.3a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.3b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 1, 3, 4 and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch pattern 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6. Pitch pattern 6 is regarded as a short realisation of Tone 2 (Mid-level) On grounds of 'phonetic similarity' it has been decided, somewhat arbitrarily perhaps, that pitch pattern 5 (S-High-rising) will be regarded as a conditioned variant of tone 4. The conditioning factor is that the syllable is

short and checked.

To recapitulate The NS local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 or 6 (Mid-level pitch). Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-level pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables, and as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.3a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of NS

Pitch pattern / Syl. Types & Vowel Length	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-rising	6.S-Mid-level
SMOOTH	bin 'to fly'	na: 'ricefield'	khau 'rice'	tom 'to boil'		
SHORT CHECKED					kop 'frog'	nok 'bird'
LONG CHECKED			da:t 'sunshine'	mi:t 'knife'		

Table 4.3b. Correlation of Initial Consonant Types and Pitch Patterns

Pitch pattern / Init. Cons. Types	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-rising	6.S-Mid-level
TYPE 1	hu: 'ear'	mu: 'hand'	khai 'egg'	phi: 'older sibling'	phak 'vegetable'	nok 'bird'
TYPE 2	kin 'to eat'		pa: 'forest'	ba: 'shoulder'	?ok 'chest'	

4.4 KSS local dialect (Tables 4.4a and b)

Fianal consonant and tonal restrictions As can be seen from Table 4.4a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.4b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 1, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similar-ity' it has been decided that the S-High-rising pitch (pitch pattern 5) will be regarded as being a conditioned variant of Tone 4, while the S-Mid-falling pitch (pitch

pattern 6) will be regarded as being a conditioned variant of Tone 2. The conditioning factor in both cases is whether the syllable is short and checked, as opposed to long and checked or smooth.

To recapitulate The KSS local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables and as pitch pattern 6 (S-Mid-falling) on short checked syllables. Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables, and as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.4a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of KSS

Pitch patterns / Syll. types & V. Length	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-High-rising	6. S-Mid-falling
SMOOTH	hu: 'ear'	mɯ: 'hand'	pha: 'to split'	tom 'to boil'		
CHECKED SHORT					suk 'cooked'	lak 'to steal'
CHECKED LONG			pi:k 'wing'	mi:t 'knife'		

Table 4.4b. Correlation of Initial Consonant Types and Pitch Patterns of KSS

Pitch patterns / Init. cons. types	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-High-rising	6. S-Mid-falling
TYPE 1	hu: 'ear'	mɯ: 'hand'	pha: 'to split'	mi:t 'knife'	suk 'cooked'	lak 'to steal'
TYPE 2	kin 'to eat'		da: 'to scold'	ba:n 'village'	tap 'liver'	

4.5 K local dialect (Tables 4.5a and b)

Speaker 1 (S 1) : Used six pitch patterns; that is, pitch patterns 1, 2, 3, 5, 7, and 8 on the Table on page 94.

Speaker 2 (S 2) : Used seven pitch patterns altogether; that is, pitch patterns 1, 2, 3, 4, 5, 6, and 8 on the Table on page 94.

Final consonant and tonal restrictions As can be seen from Table 4.5a, six pitch patterns occur in the pronunciation of speaker 1, and seven in speaker 2. However, with both speakers, only pitch patterns 1, 2, 3, and 5 may occur with smooth syllables, while only pitch patterns 3, 5, 7, and 8 may occur with checked syllables in the pronunciation of speaker 2.

Vowel length and tonal restrictions In the pronunciation of S1, only pitch patterns 3 and 5 may occur with long checked syllables, while only pitch patterns 7 and 8 may occur with short checked syllables. But in the pronunciation of S2, only pitch patterns 4 and 5 may occur with long checked syllables, while only pitch patterns 6 and 8 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.5 b, all six pitch patterns in S1 and all seven pitch patterns in S2 may occur with initial consonant type 1; but pitch patterns 2 and 8 may not occur with initial consonant type 2

When all the factors which have a bearing upon the distributions of the six and seven pitch patterns in S1 and S2 respectively are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 5. These

pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 5 in the pronunciation of S1 and pitch patterns 4 and 5 in S2. Since these patterns in S1 coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4. In S2, pitch pattern 5 coincides with one of those found with smooth syllables; that is, with Tone 4. But pitch pattern 4 may be said to be in complementary distribution with pitch pattern 3 on grounds of 'phonetic similarity'. So, long checked syllables which occur with pitch pattern 4 in S2 are regarded as being pronounced with a conditioned variant of Tone3. The conditioning factor is whether the syllable is smooth or long checked.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 7 and 8 in S1, and 6 and 8 in S2. The S-Mid-level pitch (pitch pattern 8) is regarded as being a short variant of Tone 2; while the S-High-rising pitch of S1 and S-Higher-Mid-rising pitch of S2 (pitch patterns 7 and 6 respectively) are regarded as being conditioned variants of Tone 4. The conditioning factor is whether the syllable is short and checked.

To recapitulate The K local dialect may be regarded as having four phonological tones with the realisations, which are slightly different between S1 and S2 as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables and as pitch pattern 8 (S-Mid-level pitch) on short checked syllables. Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth syllables and long checked syllables for S1. For S2 it is realised as as pitch pattern 3 on smooth syllables and as pitch pattern 4 (Low-level pitch) on long checked syllables.

Tone 4 is realised as pitch pattern 5 (High-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 7 (S-High-rising pitch) in S1 or as pitch pattern 6 (S-Higher-Mid-rising pitch) in S2 on short checked syllables.

Table 4.5a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of K

Pitch pattern / Syll. types & V. Length	1. Low-rising	2. Mid-level	3. Low-falling	4. Low-level	5. High-falling	6. S-High-er-Mid-rising	7S-High rising	8. SMid level	
SMOOTH	hu: 'ear'	mɯ: 'hand'	khai 'egg'		ba:n 'village'				SPEAKER 1
CHECKED SHORT							mat 'flea'	nok 'bird'	
CHECKED LONG			pi:k 'wing'		mi:t 'knife'				
SMOOTH	hu: 'ear'	mɯ: 'hand'	kxhai 'egg'		ba:n 'village'				SPEAKER 2
CHECKED SHORT						mat 'flea'		nok 'bird'	
CHECKED LONG				pi:k 'wing'	mi:t 'knife'				

Table 4.5b. Correlation of Initial Consonant Types and Pitch Patterns of K

Pitch pattern / Init. cons. types	1. Low-rising	2. Mid-level	3. Low-falling	4. Low-level	5. High-falling	6. SHigh-er-Mid-rising	7SHigh rising	8S-Mid level	
TYPE 1	hu: 'ear'	mɯ: 'hand'	khai 'egg'		mi:t 'knife'		mat 'flea'	nok 'bird'	S 1
TYPE 2	pi: 'year'		pa: 'forest'		pa: 'aunt'		bet 'fishhook'		
TYPE 1	hu: 'ear'	mɯ: 'hand'	kxhai 'egg'	khe:t 'torn'	mi:t 'knife'	mat 'flea'		nok 'bird'	S 2
TYPE 2	pi: 'year'		pa: 'forest'	pa:t 'lung'	pa: 'aunt'	bet 'fishhook'			

4.6 BY local dialects (Tables 4.6a, 4.6b, 4.6c, and d)

Eleven different localities of A. Bua Yai have been investigated. It is convenient, therefore, to divide these different local dialects occurring in this Amphoe into two groups according to the number of the phonological tones which appear in this area.

Group A consists of local dialects spoken in L4, L5, L6, L7, L8, L9, L10, and L11. Within these localities, there are four subgroups, that is, L4; L5 & 11; L6,7,8,9; and finally L10. (See Tables 4.6a and b on page 100 and 101.

Group B consists of local dialects spoken in L1, L2, and L3. This group has also been subdivided into three subgroups, which are illustrated in Tables 4.6c and d on page 106and107.

Group A:

Final consonant and tonal restrictions As can be seen from Table 4.6a, there are altogether eleven pitch patterns in this group though no one subgroup has more than eight pitch patterns and there are some slightly different pitch realisations among the subgroups. Tonal restrictions correlated with whether the syllable is smooth or checked are set out for each subgroup below:-

Subgroup	Pitch patterns occurring with smooth syllables	Pitch patterns occurring with checked syll.
L4	1, 2, 3, 4, 5, 7	5, 7, 8, 10
L5 & 11	1, 2, 3, 4, 5, 7	5, 7, 9, 10
L6-9	1, 2, 3, 4, 6, 7	6, 7, 9, 10
L10	1, 2, 3, 4, 5, 7	5, 7, 9, 11

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each subgroup as follows:

Subgroup	Pitch patterns occurring with long checked syll.	Pitch patterns occurring with short checked syllables
L4	5, 7	8, 10
L5 & 11	5, 7	9, 10
L6-9	6, 7	9, 10
L10	5, 7	9, 11

Initial consonants and tonal restrictions As can be seen from Table 4.6b on page 101 for any one subgroup, a total of eight pitch patterns may occur though the patterns may vary from subgroup to subgroup with initial consonant type 1, as summarised below :-

Subgroup	Pitch patterns occurring with initial consonant type 1
L4	1, 2, 3, 4, 5, 7, 8, 10
L5 & 11	1, 2, 3, 4, 5, 7, 9, 10
L6-9	1, 2, 3, 4, 6, 7, 9, 10
L10	1, 2, 3, 4, 5, 7, 9, 11

The restrictions concerning syllables with initial consonant type 2 are rather more severe, as summarised below :-

Subgroup	Pitch patterns occurring with initial consonant type 2
L4	2, 4, 5, 7, 8
L5 & 11	2, 4, 5, 7, 9
L6-9	2, 4, 6, 7, 9
L10	2, 4, 5, 7, 9

When all the factors which have a bearing upon the distributions of the eleven pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of six possible pitch contrasts in any one subgroup. This maximum applies to smooth syllables, for which the permitted pitch patterns in each subgroup have already been set out on page 95. These six contrasting patterns must therefore be regarded as the phonetic realisations of six phonological tones, Tones 1, 2, 3, 4, 5, and 6. It will

be seen that for most local dialects the realisations of the tones on smooth syllables correspond to the pitch patterns with the same number, but there is variation between the subgroups over the realisations of Tones 5 and 6. The allocation of pitch realisations, shown by the number of the pitch patterns, to phonological tones on smooth syllables is summarised below :-

	Tone 1	Tone 2	Tone 3	Tone 4	Tone 5	Tone 6
L4	1	2	3	4	5	7
L5&11	1	2	3	4	5	7
L6--9	1	2	3	4	6	7
L10	1	2	3	4	5	7

Long checked syllables have been shown to have a maximum of two possible pitch patterns in any one subgroup, as set out on p. 96. Pitch pattern 7 is common to all subgroups, and since this pattern has already been interpreted as the realisation of Tone 6 in smooth syllables, the same interpretation will be followed for long checked syllables. The other pitch patterns found on such syllables vary between 5 and 6. Since these patterns have already been interpreted as variant realisations of Tone 5 in smooth syllables, the same interpretation will be followed for long checked syllables. To sum up, long checked syllables are found to occur only with Tones 5 and 6.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in any one subgroup, though these vary from subgroup to subgroup, between pitch patterns 8, 9, 10, and 11 as set out on p. 96. Since pitch pattern 10 differs from pitch pattern 2 in length only there is no difficulty about assigning syllables with this pattern to Tone 2. Pitch pattern 8, 9, and 11 are not found on smooth syllables, so that it has been decided to use 'phonetic similarity' as a criterion for their allocation to one or other of the six Tones. In the case of pattern 11 which only occurs in L10, it has been decided, somewhat arbitrarily perhaps, to take the starting pitch rather than the contour as the measure of 'similarity', and this pattern

is accordingly regarded as being a conditioned variant of Tone 2, the conditioning factor being that the syllables on which they occur are short and checked. Using the same measure of 'similarity', i.e. the starting point, pattern 9 (S-High-rising pitch) is interpreted as the realisation in short checked syllables of Tone 4, whose realisation on smooth syllables is high-level. It will be seen, however, that pitch pattern 8 also has a mid starting point, so it has been decided in this case to take the nearest pitch contour as phonetically the most 'similar', and accordingly this pattern is regarded as a conditioned variant of Tone 6.

To recapitulate The BY local dialect, Group A, may be regarded as having six phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables. It is also realised as pitch pattern 10 (S-Mid-level pitch) in L4, L5&11, and L6-9; or as pitch pattern 11 (S-Mid-falling pitch) in L10 on short checked syllables. Initial consonants of syllables which occur with pitch patterns 10 and 11 are always of type 1.

Tone 3 is realised as pitch pattern 3 (High-sustained falling pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 4 is realised as pitch pattern 4 (High-level pitch) on smooth syllables; and as pitch pattern 9 (S-High-rising) on short checked syllables in every subgroup except in L4.

Tone 5 is realised as pitch pattern 5 (Low-falling pitch) in L4, L5&11, and L10, or as pitch

pattern 6 (Low-level pitch) in L6-9 on smooth and long checked syllables.

Tone 6 is realised as pitch pattern 7 (Higher-Mid-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 8 (S-Mid-rising pitch) on short checked syllables in L4.

Diagram 4.1 : Realisations (by pitch patterns) of Phonological Tones in BY, Group A

		Tone 1	Tone 2		Tone 3	Tone 4		Tone 5		Tone 6		
		Sm	Sm	SC	Sm	Sm	SC	Sm	LC	Sm	LC	SC
L4	p.p	1	2	10	3	4	-	5	5	7	7	8
L5&11		1	2	10	3	4	9	5	5	7	7	-
L6-9		1	2	10	3	4	9	6	6	7	7	-
L10		1	2	11	3	4	9	5	5	7	7	-

(p.p = pitch pattern; Sm = smooth; LC = long checked
SC = short checked)

p.p 1 = Low-rising pitch
2 = Mid-level pitch
3 = High-sustained-falling pitch
4 = High-level pitch
5 = Low-falling pitch
6 = Low-level pitch
7 = Higher-Mid-falling pitch
8 = S-Mid-rising pitch
9 = S-High-rising pitch
10 = S-Mid-level pitch
11 = S-Mid-falling pitch

Table 4.6a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of BY (Group A)

Syll. Types & V. Length \ Pitch Patterns	1. Low-rising	2. Mid-level	3. High-sustained-falling	4. High-level	5. Low-falling	6. Low-level	7. Higher-Mid-falling	8. S-Mid-rising	9. S-High-rising	10. S-Mid-level	11. S-Mid-falling	SUB GROUPS
SMOOTH	ɦu: 'ear'	pi: 'year'	mɯ: 'hand'	khai 'egg'	khau 'rice'		pa: 'aunt'					L
CHECKED SHORT								mat 'flea'		nok 'bird'		L 4
CHECKED LONG					pɔɔt 'lung'		mi:t 'knife'					
SMOOTH	hu: 'ear'	pi: 'year'	mɯ: 'hand'	khai 'egg'	khau 'rice'		pa: 'aunt'					L
CHECKED SHORT									mat 'flea'	nok 'bird'		5 & 11
CHECKED LONG					pɔɔt 'lung'		mi:t 'knife'					
SMOOTH	ɦu: 'ear'	pi: 'year'	mɯ: 'hand'	khai 'egg'		khau 'rice'	pa: 'aunt'					L
CHECKED SHORT									mat 'flea'	nok 'bird'		6 7
CHECKED LONG						pɔ:t 'lung'	mi:t 'knife'					8 9
SMOOTH	ɦu: 'ear'	pi: 'year'	mɯ: 'hand'	kxhai 'egg'	khau 'rice'		pa: 'aunt'					L
CHECKED SHORT									mat 'flea'		nok 'bird'	10
CHECKED LONG					pɔɔt 'lung'		mi:t 'knife'					

Table 4.6b. Correlation of Initial Consonant Types and Pitch Patterns of PY(Group A)

PITCH PATTERN / Init. cons. types	1. Low-rising	2. Mid-level	3. High-sustained falling	4. High-level	5. Low-falling	6. Low-level	7. Higher-Mid-falling	8. S-Mid-rising	9. S-High-rising	10. S-Mid-level	11. S-Mid-falling	
TYPE 1	ˆhu 'ear'	phi: 'older sibling'	mu: 'hand'	khai 'egg'	khau 'rice'		mi:t 'knife'	mat 'flea'		nok 'bird'		L
TYPE 2		pi: 'year'		pa: 'forest'	pɔət 'lung'		pa: 'aunt'	bet 'fishhook'				4
TYPE 1	hu: 'ear'	phi: 'older sibling'	mu: 'hand'	khai 'egg'	khau 'rice'		mi:t 'knife'		mat 'flea'	nok 'bird'		L
TYPE 2		pi: 'year'		pa: 'forest'	pɔət 'lung'		pa: 'aunt'		bet 'fishhook'			5 & 11
TYPE 1	ˆhu: 'ear'	phi: 'older sibling'	mu: 'hand'	khai 'egg'		khau 'rice'	mi:t 'knife'		mat 'flea'	nok 'bird'		L
TYPE 2		pi: 'year'		pa: 'forest'		dɔ:k 'flower'	pa: 'aunt'		bet 'fishhook'			6 7 8 9
TYPE 1	ˆhu: 'ear'	phi: 'older sibling'	mu: 'hand'	kxhai 'egg'	khau 'rice'		mi:t 'knife'		mat 'flea'		nok 'bird'	L
TYPE 2		pi: 'year'		pa: 'forest'	pɔət 'lung'		pa: 'aunt'		bet 'fishhook'			10

Group B:

Final consonant and tonal restrictions As can be seen from Table 4.6c, there are altogether eight pitch patterns in this group though no one subgroup has more than six pitch patterns; that is, five pitch patterns in L1 and six pitch patterns in L2 and L3. There are some slightly different pitch realisations among the subgroups. Tonal restrictions correlated with whether the syllable is smooth or checked are set out for each subgroup below:-

Subgroup	Pitch patterns occurring with smooth syllables	Pitch patterns occurring with checked syllables
L1	1, 3, 4, 5	4, 5, 6
L2	2, 3, 4, 5	4, 5, 7, 8
L3	2, 3, 4, 5	4, 5, 6, 8

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each subgroup as follows:

Subgroup	Pitch patterns occurring with long checked syll.	Pitch patterns occurring with short checked
L1	4, 5	6
L2	4, 5	7, 8
L3	4, 5	6, 8

Initial consonants and tonal restrictions As can be seen from Table 4.6d on page 107, for any one subgroup, a total of the number of pitch patterns; that is, five in L1 and six in L2 and L3, may occur with initial consonant type 1. However, the patterns may vary from subgroup to subgroup. These will be summarised as below :-

Subgroup	Pitch patterns occurring with initial consonant type 1
L1	1, 3, 4, 5, 6
L2	2, 3, 4, 5, 7, 8
L3	2, 3, 4, 5, 6, 8

The restrictions concerning syllables with initial consonant type 2 are also summarised below :-

Subgroup	Pitch patterns occurring with initial consonant type 2
L1	3, 4, 5, 6
L2	3, 4, 5, 7
L3	3, 4, 5, 6

When all the factors which have a bearing upon the distributions of the eight pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts in any one subgroup. This maximum applies to smooth syllables, for which the permitted pitch patterns in each subgroup have already been set out on page 102. These four contrasting patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4. It will be seen that the pitch patterns of these subgroups would be allocated to tones as below :-

Subgroup	Tone 1	Tone 2	Tone 3	Tone 4
L1	1	3	4	5
L2	2	3	4	5
L3	2	3	4	5

Long checked syllables have a maximum of two possible pitch patterns in any one subgroup, as set out on page 102. Since these patterns have already been interpreted as the realisations of Tones 3 and 4 on smooth syllables, the same interpretation will be followed for long checked syllables.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in any one subgroup except in L1 which has only one. However, these patterns vary from subgroup to subgroup between pitch patterns 6, 7, and 8 as set out on page 102. Since pitch pattern 8 differs from pitch pattern 3 in length only, there is no difficulty about assigning syllables with this pattern to Tone 2. Pitch patterns 6 and 7 are not found on smooth syllables, so that it has been decided to use 'phonetic similarity' as

a criterion for their allocation to one or other of the four Tones. It has been decided, somewhat arbitrarily perhaps, to take the starting point as the measure of 'similarity', these patterns (6 and 7) are accordingly regarded as being conditioned variants of Tone 4, whose realisation on smooth syllables is high-falling. The conditioning factor is whether the syllables on which they occur are short and checked or not.

To recapitulate The BY Group B local dialects may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Lower-Mid-rising pitch) in L1, or as pitch pattern 2 (Low-rising pitch) in L2 and L3 and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 3 (Mid-level pitch) on smooth syllables; and as pitch pattern 8 (S-Mid-level pitch) on short checked syllables in L2 and L3. Initial consonants of the syllables which occur with pitch pattern 8 are always of type 1.

Tone 3 is realised as pitch pattern 4 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 5 (High-falling pitch) on smooth and long checked syllables; and as pitch pattern 6 (S-High-level pitch) in L1 and L3 or as pitch pattern 7 (S-High-rising pitch) in L2 on short checked syllables.

Diagram 4.2 : Realisations (by pitch patterns) of Phonological Tones in BY, Group B.

	Tone 1	Tone 2		Tone 3		Tone 4		
	Smooth	Smooth	SC	Smooth	LC	Smooth	LC	SC
L1	p.p 1	3	-	4	4	5	5	6
L2	2	3	8	4	4	5	5	7
L3	2	3	8	4	4	5	5	6

(SC = short checked; LC = long checked; p.p = pitch pattern)

p.p 1 = Lower-Mid-rising pitch
2 = Low-rising pitch
3 = Mid-level pitch
4 = Low-falling pitch
5 = High-falling pitch
6 = S-High-level pitch
7 = S-High-rising pitch
8 = S-Mid-level pitch

It can be summed up that the local dialects of A. BY may be regarded as having two tonal systems; that is, 4-Tone system and 6-Tone system.

Table 4.6c. Correlation of Pitch Patterns with Syllable Types and Vowel Length of BY (Group B)

Pitch pattern / Syll types & V.Length	1.Lower-Mid-rising	2.Low-rising	3.Mid-level	4.Low-falling	5.High-falling	6.S-High level	7.S-High rising	8.S-Mid level	SUBGROUPS
SMOOTH	hu: 'ear'		pi: 'year'	khai 'egg'	pa: 'aunt'				LOCALITY 1
CHECKED SHORT						mat 'flea; to tie'			
CHECKED LONG				dɛ:t 'sunshine'	mi:t 'knife'				
SMOOTH		hu: 'ear'	pi: 'year'	khai 'egg'	pa: 'aunt'				LOCALITY 2
CHECKED SHORT							mat 'flea'	nok 'bird'	
CHECKED LONG				dɛ:t 'sunshine'	mi:t 'knife'				
SMOOTH		hu: 'ear'	pi: 'year'	khai 'egg'	pa: 'aunt'				LOCALITY 3
CHECKED SHORT						mat 'flea'		nok 'bird'	
CHECKED LONG				dɛ:t 'sunshine'	mi:t 'knife'				

Table 4.6d. Correlation of Initial Consonant Types and Pitch Patterns of BY (Group B)

Pitch pattern / Init. cons. types	1.Lower-Mid-rising	2.Low-rising	3.Mid-level	4.Low-falling	5.High-falling	6S-High level	7S-High rising	8S-Mid-level	
TYPE 1	hu: 'ear'		mɯ: 'hand'	khai 'egg'	na:m 'water'	mat 'flea; to tie'			L 1
TYPE 2			pi: 'year'	pa: 'forest'	pa: 'aunt'	bet 'fishhook'			
TYPE 1		hu: 'ear'	mɯ: 'hand'	khai 'egg'	na:m 'water'		mat 'flea'	nok 'bird'	L 2
TYPE 2			pi: 'year'	pa: 'forest'	pa: 'aunt'		bet 'fishhook'		
TYPE 1		hu: 'ear'	mɯ: 'hand'	khai 'egg'	na:m 'water'	mat 'flea'		nok 'bird'	L 3
TYPE 2			pi: 'year'	pa: 'forest'	pa: 'aunt'	bet 'fishhook			

4.7 PT local dialect (Tables 4.7a and b)

Two different localities of A.Prathai have been investigated; and it is found that the number of the phonological tones in these two areas is different. That is, there are five phonological tones in locality 1, while there are six phonological tones in locality 2.

L 1:

Final consonant and tonal restrictions As can be seen from Table 4.7a, there are altogether seven pitch patterns in this local dialect. However, only pitch patterns 1, 2, 4, 5, and 6 may occur with smooth syllables, while only pitch patterns 5, 6, 7, and 9 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 5 and 6 may occur with long checked syllables while only pitch patterns 7 and 9 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.7b, all seven pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 4, 5, 6, and 7 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the seven pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of five possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 4, 5, and 6. These pitch patterns must therefore be regarded as the phonetic realisations of five phonological tones, Tones 1, 2, 3, 4, and 5 (Low-rising; Mid-level; High-level; Low-level; and High-falling respectively).

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 5 and 6. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 4 or 5.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 7 and 9. On grounds of 'phonetic similarity' in the starting point, it has been decided, somewhat arbitrarily perhaps, that short checked syllables which occur with S-Higher-Mid-rising pitch (pitch pattern 7) are regarded as being a conditioned variant of Tone 3, the conditioning factor being whether the syllable is short and checked or not. Syllables with S-Mid-level pitch (pitch pattern 9) may be regarded as having a short variant of Tone 2.

L 2 :

Final consonant and tonal restrictions As can be seen from Table 4.7a, there are altogether eight pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, 4, 5, and 6 may occur with smooth syllables, while only pitch patterns 5, 6, 8, and 9 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 8 and 9 may occur with short checked syllables.

Precious of time usual that it was not permitted to record the complete test list (see Appendix 2) for this locality, so that it happened that the recorded sample only shows pitch pattern 5 for long checked syllables. Since words like mi:t 'knife' invariably have the same pitch pattern as pa 'aunt' in other local dialect, it is assumed here that such words would have pitch pattern 6. (For the use of the tick (✓) in the relevant square, see p. 73.)

Initial consonant and tonal restrictions As can be seen from Table 4.7b, all eight pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 4, 5, 6, and 8 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the eight pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of six possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch pat-

terns 1, 2, 3, 4, 5, and 6. These pitch patterns must therefore be regarded as the phonetic realisations of six phonological tones, Tones 1, 2, 3, 4, 5, and 6.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 5 and 6. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 5 or 6.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 8 and 9. On grounds of 'phonetic similarity' in the starting point, it has been decided, somewhat arbitrarily perhaps, that short checked syllables which occur with S-High-rising pitch (pitch pattern 8) are regarded as having a conditioned variant of Tone 4. The conditioning factor being whether the syllable is short and checked or not. Syllables with S-Mid-level pitch (pitch pattern 9) may be regarded as having a short variant of Tone 2.

To recapitulate The local dialects in A.PT may be regarded as having five or six phonological tones with the realisations as follows :-

L 1 : 5-Tone system

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) or pitch pattern 9 (S-Mid-level pitch) on smooth and short checked syllables. Initial consonants of the syllables which occur with pitch pattern 9 are always of type 1.

Tone 3 is realised as pitch pattern 4 (High-level pitch) on smooth syllables and as pitch pattern 7 (S-Higher-Mid-rising pitch) on short checked syllables.

Tone 4 is realised as pitch pattern 5 (Low-level

pitch) on smooth syllables and long checked syllables.

Tone 5 is realised as pitch pattern 6 (High-falling pitch) on smooth syllables and long checked syllables.

L 2 : 6-Tone system

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables and as pitch pattern 9 (S-Mid-level pitch) on short checked syllables. Initial consonants of the syllables which occur with pitch pattern 9 are always of type 1.

Tone 3 is realised as pitch pattern 3 (High-sustained falling pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 4 is realised as pitch pattern 4 (High-level pitch) on smooth syllables and as pitch pattern 8 (S-High-rising pitch) on short checked syllables.

Tone 5 is realised as pitch pattern 5 (Low-level pitch) on smooth syllables and long checked syllables.

Tone 6 is realised as pitch pattern 6 (High-falling pitch) on smooth syllables and long checked syllables.

Table 4.7a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of PT

Pitch patterns / Syll. types & V. Length	1. Low rising	2. Mid-level	3. High sustained falling	4. High level	5. Low-level	6. High falling	7. S-High-er-Mid rising	8. S-High rising	9. S-Mid-level	
SMOOTH	hu: 'ear'	pi: 'year'		khai 'egg'	khau 'rice'	pa: 'aunt'				LOCALITY 1
CHECKED SHORT							mat 'flea'		nok 'bird'	
CHECKED LONG					po:t 'lung'	mi:t 'knife'				
SMOOTH	hu: 'ear'	pi: 'year'	mu: 'hand'	khai 'egg'	khau 'rice'	pa: 'aunt'				LOCALITY 2
CHECKED SHORT								mat 'flea'	nok 'bird'	
CHECKED LONG					po:t 'lung'	✓				

Table 4.7b. Correlation of Initial Consonant Types and Pitch Patterns of PT

Init. cons. types / PITCH PATTERNS	1. Low-rising	2. Mid-level	3. High-sustained-falling	4. High-level	5. Low-level	6. High-falling	7. S-Higher Mid-rising	8. S-High-rising	9. S-Mid-level	
TYPE 1	hu: 'ear'	phi: 'older sibling'		khai 'egg'	khau 'rice'	mi:t 'knife'	mat 'flea'		nok 'bird'	L 1
TYPE 2		pi: 'year'		pa: 'forest'	po:t 'wing'	pa: 'aunt'	kop 'frog'			
TYPE 1	hu: 'ear'	phi: 'older sibling'	mu: 'hand'	khai 'egg'	khau 'rice'	na:m 'water'		mat 'flea'	nok 'bird'	L 2
TYPE 2		pi: 'year'		pa: 'forest'	po:t 'lung'	pa: 'aunt'		kop 'frog'		

4.8 CP local dialects (Tables 4.8a, b, c, d, e, and f)

Six different localities of A. Bua Yai have been investigated. It is convenient, therefore, to devide these different local dialects occurring in this Amphoe into three groups according to the number of the phonological tones which appear in this area.

Group A consists of local dialects spoken in L1 and L2. (See Tables 4.8a and b on p. 117.) This group has six phonological tones.

Group B consists of local dialects spoken in L3, L5, and L6. (See Tables 4.8c and d on p. 122-3.) The local dialects in this group have five phonological tones.

Group C consists of only one local dialect-L4. (See Tables 4.8e and f on p. 126.) There are four phonological tones in this local dialect.

Group A:

Final consonant and tonal restrictions As can be seen from Table 4.8a, there are altogether twelve pitch patterns in this group though no one subgroup has more than eight pitch patterns and there are some slightly different pitch realisations between L1 and L2. Tonal restrictions correlated with whether the syllable is smooth or checked are set out for each locality below :-

Locality	Pitch patterns occurring with smooth syl.	Pitch patterns occurring with checked syl.
L1	1, 3, 4, 5, 6, 8	6, 8, 10, 12
L2	2, 3, 4, 5, 7, 9	7, 9, 11, 12

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each locality as follows:

L	Pitch patterns occurring with long checked syl.	Pitch patterns occurring with short checked syl.
L1	5, 8	10, 12
L2	7, 9	11, 12

Initial consonants and tonal restrictions As can be seen from Table 4.8b on p. 117, the restrictions concerning syllables with two types of initial consonants may be set out as below :-

L	Pitch patterns occurring with initial cons. type1	Pitch patterns occurring with initial cons. type2
L1	1, 3, 4, 5, 6, 8, 10, 12	3, 5, 6, 8, 10
L2	2, 4, 5, 7, 9, 11, 12	3, 5, 7, 9, 11

When all the factors which have a bearing upon the distributions of the twelve pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of six possible pitch contrasts in any one locality. This maximum applies to smooth syllables, for which the permitted pitch patterns in each locality have already been set out on p. 113. These six contrasting patterns must therefore be regarded as the phonetic realisations of six phonological tones, Tones 1, 2, 3, 4, 5, and 6. It will be seen that the pitch patterns of these two localities would be allocated to tones as below :

L	Tone 1	Tone 2	Tone 3	Tone 4	Tone 5	Tone 6
L1	1	3	4	5	6	8
L2	2	3	4	5	7	9

Long checked syllables have a maximum of two possible pitch patterns in any one locality, as set out above. Since these patterns have already been interpreted as the realisations of Tones 5 and 6 on smooth syllables, the same interpretation will be followed for long checked syllables.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in any one locality, though these vary from locality to locality between pitch patterns 10, 11, and 12 as set out above. Since pitch pat-

tern 12 differs from pitch pattern 3 in length only, there is no difficulty about assigning syllables with this pattern to Tone 2. Pitch pattern 10 also has the mid starting pitch, but it is not possible to link this pattern with pitch pattern 3 on smooth syllables because pitch pattern 3 is already linked to pitch pattern 12. So it has been decided, somewhat arbitrarily perhaps, to take the nearest starting pitch as phonetically the most 'similar' as the criterion for linking pitch pattern 10 to pitch pattern 8 which is the realisation of Tone 6. Thus, pitch pattern 10 is regarded as a conditioned variant of Tone 6 whose realisation is Higher-Mid-falling in L1. The conditioning factor is that the syllables on which they occur are short and checked. Using the same measure of 'similarity', i.e. the nearest starting pitch, pattern 11 is also interpreted as the realisation in short checked syllables of Tone 6 whose realisation on smooth syllable in L2 is High-falling.

To recapitulate The CP, Group A, local dialects may be regarded as having six phonological Tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) in L1, or as pitch pattern 2 (Lower-Mid-rising pitch) in L2 and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 3 (Mid-level pitch) on smooth syllables and as pitch pattern 12 (S-Mid-level) on short checked syllables. In L2 initial consonants which occur with p.p 3 are always of type 1 but are always of type 2; while in L1 only initial consonants of syllables which occur with pitch pattern 12 are always of type 1.

Tone 3 is realised as pitch pattern 4 (High-sustained falling pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 4 is realised as pitch pattern 5 (High-level pitch) and is restricted to smooth syllables.

Tone 5 is realised as pitch pattern 6 (Low-falling pitch) in L1, or as pitch pattern 7 (Low-level pitch) in L2 on smooth syllables and long checked syllables.

Tone 6 is realised as pitch pattern 8 (Higher-Mid-falling pitch) in L1, or as pitch pattern 9 (High-falling pitch) in L2 on smooth syllables and long checked syllables. It is also realised as pitch pattern 10 (S-Mid-rising pitch) in L1, or as pitch pattern 11 (S-Higher-Mid-rising pitch) in L2 on short checked syllables.

Diagram 4.3 : Realisations (by pitch patterns) of Phonological Tones in CP, Group A

		Tone 1	Tone 2		Tone 3	Tone 4	Tone 5		Tone 6		
		Sm	Sm	SC	Sm	Sm	Sm	LC	Sm	LC	SC
L1	p.p	1	3	12	4	5	6	6	8	8	10
L2		2	3	12	4	5	7	7	9	9	11

(p.p = pitch pattern; Sm = smooth; LC = long checked; SC = short checked)

p.p 1 = Low-rising pitch
2 = Lower-Mid-rising pitch
3 = Mid-level pitch
4 = High-sustained-falling pitch
5 = High-level pitch
6 = Low-falling pitch
7 = Low-level pitch
8 = Higher-Mid-falling pitch
9 = High-falling pitch
10 = S-Mid-rising pitch
11 = S-Higher-Mid-rising pitch
12 = S-Mid-level pitch

Table 4.8a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of CP (Group A)

Pitch Patterns / Syll. types & V. Length	1. Low-rising	2. Lower-Mid-rising	3. Mid-level	4. High-sustained-falling	5. High-level	6. Low-falling	7. Low-level	8. Higher-Mid-falling	9. High-falling	10 S-Mid-rising	11. S-Higher-Mid-rising	12. S-Mid-level	
SMOOTH	hu: 'ear'		pi: 'year'	mɯ: 'hand'	khai 'egg'	khau 'rice'		pa: 'aunt'					LOCALITY 1
CHECKED SHORT										mat 'flea'		nok 'bird'	
CHECKED LONG						pɔɔt 'lung'		mi:t 'knife'					
SMOOTH		hu: 'ear'	pi: 'year'	mɯ: 'hand'	khai 'egg'		khau 'rice'		pa: 'aunt'				LOCALITY 2
CHECKED SHORT											mat 'flea'	mat 'to tie'	
CHECKED LONG							pɔ:t 'lung'		mi:t 'knife'				

Table 4.8b. Correlation of Initial Consonant Types and Pitch Patterns of CP (Group A)

Pitch Pattern / Init. cons. types	1. Low-rising	2. Lower-Mid-rising	3. Mid-level	4. High-sustained-falling	5. High-level	6. Low-falling	7. Low-level	8. Higher-Mid-falling	9. High-falling	10 S-Mid-rising	11. S-Higher-Mid-rising	12. S-Mid-level	
TYPE 1	hu: 'ear'		phi: 'older sibling'	mɯ: 'hand'	khai 'egg'	khau 'rice'		na:m 'water'		mat 'flea'		nok 'bird'	L 1
TYPE 2			pi: 'year'		pa: 'forest'	pi:k 'wing'		pa: 'aunt'		dip 'raw'			
TYPE 1		hu: 'ear'		mɯ: 'hand'	khai 'egg'		khau 'rice'		na:m 'water'		mat 'flea'	mat 'to tie'	L 2
TYPE 2			pi: 'year'		phi: 'older sibling'		pɔ:t 'lung'		pa: 'aunt'		dip 'raw'		

Group B :

Final consonant and tonal restrictions As can be seen from Table 4.8c, there are altogether ten pitch patterns in this group though no one local dialect in this group has more than seven pitch patterns and there are some slightly different pitch realisations among the local dialects. Tonal restrictions correlated with whether the syllable is smooth or checked are set out for each locality as below :-

Locality	Pitch patterns occurring with smooth syl.	Pitch patterns occurring with checked syl.
L3	1, 3, 4, 6, 7	6, 7, 8, 10
L5	2, 3, 4, 5, 7	5, 7, 9, 10
L6	2, 3, 4, 6, 7	6, 7, 9, 10

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each locality as follows:

Locality	Pitch patterns occurring with long checked syllables	Pitch patterns occurring with short checked syllables
L3	6, 7	8, 10
L5	5, 7	9, 10
L6	6, 7	9, 10

Initial consonants and tonal restrictions As can be seen from Table 4.8d on p.123 , for any one locality, a total of seven pitch patterns may occur though the patterns may vary from locality to locality with initial consonant type 1, as summarised below :-

Locality	Pitch patterns occurring with init. cons. type1
L3	1, 3, 4, 6, 7, 8, 10
L5	2, 3, 4, 5, 7, 9, 10
L6	2, 3, 4, 6, 7, 9, 10

The restrictions concerning syllables with initial consonant type 2 are rather more severe, as summarised as follows:

Locality	Pitch patterns occurring with initial consonant type 2
L3	3, 4, 6, 7, 8
L5	2, 4, 5, 7, 9
L6	3, 4, 6, 7, 9

When all the factors which have a bearing upon the distributions of the ten pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of five possible pitch contrasts in any one locality. This maximum applies to smooth syllables, for which the permitted pitch patterns in each local dialect have already been set out on p. 118. These five contrasting patterns must therefore be regarded as the phonetic realisations of five phonological tones, Tones 1, 2, 3, 4, and 5. The allocation of pitch realisations, shown by the number of the pitch patterns, to phonological tones on smooth syllables is summarised below :

Locality	Tone 1	Tone 2	Tone3	Tone 4	Tone 5
L3	1	3	4	6	7
L5	2	3	4	5	7
L6	2	3	4	6	7

Long checked syllables have been shown to have a maximum of two possible pitch patterns in any one local dialect, as set out on p. 118. Pitch pattern 7 is common to all local dialect, and since this pattern has already been interpreted as the realisation of Tone 5 in smooth syllables, the same interpretation will be followed for long checked syllables. The other pitch patterns found on such syllables vary between 5 and 6. Since these patterns have already been interpreted as variant realisations of Tone 4 in smooth syllables, the same interpretation will be followed for long checked syllables. To sum up, long checked syllables are found to occur only with Tones 4 and 5.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in any one locality, though these vary from locality to locality, between pitch

patterns 8, 9,and 10 as set out on p. 118. Since pitch pattern 10 differs from pitch pattern 3 in length only, there is no difficulty about assigning syllables with this pattern to Tone 2. Pitch patterns 8 and 9 are not found on smooth syllables, so it has been decided to use 'phonetic similarity' as a criterion for their allocation to one or other of the five tones. In this case, it has been decided, somewhat arbitrarily perhaps to take the starting pitch as the measure of 'similarity', and these patterns, 8 and 9, are accordingly regarded as being conditioned variants of Tone 3, the conditioning factor being that the syllables on which they occur are short and checked.

To recapitulate The CP, Group B, local dialects may be regarded as having five phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) in L3, or as pitch pattern 2 (Lower-Mid-rising pitch) in L5 and L6; and is restricted to smooth syllables. In L3 and L6 initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 3 (Mid-level pitch) on smooth syllables and as pitch pattern 10 (S-Mid-level pitch) on short checked syllables. In L5 initial consonants are always of type 1, but in L3 and L6 only the initial consonants of syllables which occur with pitch pattern 10 are always of type 1.

Tone 3 is realised as pitch pattern 4 (High-level pitch) on smooth syllables; and as pitch pattern 8 (S-Higher-Mid-rising pitch) in L3, or as pitch pattern 9 (S-High-rising pitch) in L5 and L6 on short checked syllables.

Tone 4 is realised as pitch pattern 5 (Low-level pitch) in L5 or pitch pattern 6 (Low-falling pitch) in L3 and L6 on smooth syllables and and long checked syllables.

Tone 5 is realised as pitch pattern 7 (High-falling pitch) on smooth syllables and long checked syllables.

Diagram 4.4 : Realisations (by pitch patterns) of Phonological Tones in CP, Group b

	Tone 1	Tone 2		Tone 3		Tone 4		Tone 5	
	Smooth	Sm	SC	Sm	SC	Sm	LC	Sm	LC
L3	p.p1	3	10	4	8	6	6	7	7
L5	2	3	10	4	9	5	5	7	7
L6	2	3	10	4	9	6	6	7	7

(p.p = pitch pattern; Sm = Smooth; SC = short checked; LC = long checked)

p.p 1 = Low-rising pitch
2 = Lower-Mid-rising pitch
3 = Mid-level pitch
4 = High-level pitch
5 = Low-level pitch
6 = Low-falling pitch
7 = High-falling pitch
8 = S-Higher-Mid rising pitch
9 = S-High-rising pitch
10 = S-Mid-level pitch

Table 4.8c. Correlation of Pitch Patterns with Syllable Types and Vowel Length of CP (Group B)

PITCH PATTERNS / Syll. type & V. Length	1. Low-rising	2. Lower-mid-rising	3. Mid-level	4. High-level	5. Low-level	6. Low-falling	7. High-falling	8. 5-High-mid-rising	9. 5-High-rising	10. 5-Mid-level	
SMOOTH	˜hu: 'ear'		pi: 'year'	khai 'egg'		khau 'rice'	pa: 'aunt'				LOCALITY 3
CHECKED SHORT								mat 'flea'		nok 'bird'	
CHECKED LONG						kha:t 'torn'	lu:k 'child'				
SMOOTH		˜hu: 'ear'	pho: 'father'	khai 'egg'	khau 'rice'		pa: 'aunt'				LOCALITY 5
CHECKED SHORT									mat 'flea'	nok 'bird'	
CHECKED LONG					kha:t 'torn'		mi:t 'knife'				
SMOOTH		˜hu: 'ear'	pi: 'year'	khai 'egg'		khau 'rice'	pa: 'aunt'				LOCALITY 6
CHECKED SHORT									mat 'flea'	nok 'bird'	
CHECKED LONG						kha:t 'torn'	mi:t 'knife'				

Table 4.8d. Correlation of Initial Consonant Types and Pitch Patterns of CP (Group B)

Init. cons. types \ PITCH PATTERNS	1. Low-rising	2. Lower-Mid-rising	3. Mid-level	4. High-level	5. Low-level	6. Low-falling	7. High-falling	8. 5-Higher Mid-rising	9. 5-High-rising	10. 5-Mid-level	
TYPE 1	ɲu: 'ear'		mɯ: 'hand'	khai 'egg'		khau 'rice'	lu:k 'child'	mat 'flea'		nok 'bird'	L 3
TYPE 2			pi: 'year'	pa: 'forest'		pɔət 'lungs'	pa: 'aunt'	bet 'fishhook'			
TYPE 1		ɲu: 'ear'	phi: 'older sibling'	mɯ: 'hand'	khau 'rice'		mi:t 'knife'		mat 'flea'	nok 'bird'	L 5
TYPE 2		pi: 'year'		pa: 'forest'	pɔət 'lungs'		pa: 'aunt'		bet 'fishhook'		
TYPE 1		ɲu: 'ear'	phi: 'older sibling'	mɯ: 'hand'		khau 'rice'	mi:t 'knife'		mat 'flea'	nok 'bird'	L 6
TYPE 2			pi: 'year'	pa: 'forest'		pɔət 'lungs'	pa: 'aunt'		bet 'fishhook'		

Group C :

Final consonant and tonal restrictions As can be seen from Table 4.8e on p. 126, there are altogether seven pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, 6, and 7 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5, 6, and 7 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.8f, all seven pitch patterns may occur with initial consonant type 1, but only pitch patterns 1, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the seven pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with the smooth syllables, one may say that long checked syllables may occur with either Tone 3 or Tone 4.

Short checked syllables have a maximum of three possible pitch patterns, namely pitch patterns 5, 6, and 7. Since pitch pattern 6 (S-Mid-level pitch) differs from pitch pattern 2 in length only, there is no difficulty about assigning syllables with this pattern to Tone 2. On grounds of 'phonetic similarity' it has been decided, somewhat arbitrarily perhaps, that S-High-rising pitch (pitch

pattern 5) will be regarded as a conditioned variant of Tone 4. The conditioning factor is whether the syllable is short and checked or not. In the case of pitch pattern 7 (S-Higher-Mid-level pitch), which has only slight difference from pitch pattern 6 at the starting pitch, it will be regarded as one of the conditioned variants of Tone 2. The conditioning factor, according to the limited data, is whether the syllable is short and checked, ended only by a glottal stop or not.

To recapitulate The CP local dialect of this locality may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables, and as pitch pattern 6 (S-Mid-level pitch) on short checked syllables. It is also realised as pitch pattern 7 (S-Higher-Mid-level pitch) on short checked syllables which are only ended by a glottal stop. Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-level pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth and long checked syllables. It is also realised as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.8e. Correlation of Pitch Patterns with Syllable Types and Vowel Length of CP (Group C)

Pitch patterns / Syll. types & V.Length	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High rising	6.S-Mid-level	7.S-High-er-Mid-level
SMOOTH	hu: 'ear'	mɯ: 'hand'	kxhai 'egg'	pa: 'aunt'			
CHECKED SHORT					mat 'flea'	nok 'bird'	phɔ? 'father'
CHECKED LONG			pi:k 'wing'	mi:t 'knife'			

Table 4.8f. Correlation of Initial Consonant Types and Pitch Patterns of CP (Group C)

Pitch patterns / Init. cons. types	1.Low-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High rising	6.S-Mid-level	7.S-High-er-Mid-level
TYPE 1	hu: 'ear'	mɯ: 'hand'	kxhai 'egg'	mi:t 'knife'	mat 'flea'	nok 'bird'	phɔ? 'father'
TYPE 2	pi: 'year'		pi:k 'wing'	pa: 'aunt'	kop 'frog'		

4.9 PM local dialect (Tables 4.9a and b)

Five localities were sampled within A.PM.

Final consonant and tonal restrictions As can be seen from Table 4.9a, there are altogether six pitch patterns in each local dialect in this Amphoe. However, in L1 and L5, only pitch patterns 1, 2, 3, and 6 may occur with smooth syllables, while pitch patterns 3, 6, 8, and 10 may occur with checked syllables.

In L2, only pitch patterns 1, 2, 4, and 6 may occur with smooth syllables, while pitch patterns 4, 6, 9, and 11 may occur with checked syllables.

In L3, only pitch patterns 1, 2, 4, and 6 may occur with smooth syllables, while only pitch patterns 4, 6, 8, and 10 may occur with checked syllables.

Finally, in L4 only pitch patterns 1, 2, 5, and 7 may occur with smooth syllables, while only pitch patterns 5, 7, 9, and 10 may occur with checked syllables.

Vowel length and tonal restrictions In L1 and 5, only pitch patterns 3 and 6 may occur with long checked syllables while only pitch patterns 8 and 10 may occur with short checked syllables.

In L2, only pitch patterns 4 and 6 may occur with long checked syllables while only pitch patterns 9 and 11 may occur with short checked syllables.

In L3, only pitch patterns 4 and 6 may occur with long checked syllables while only pitch patterns 8 and 10 may occur with short checked syllables.

In L4, only pitch patterns 5 and 7 may occur with long checked syllables while only pitch patterns 9 and 10 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.9b, a total of six pitch patterns in each local dialect may occur with initial consonant type 1, but no local dialect has more than four possible pitch patterns with initial consonant type 2, as below :

L1 has pitch patterns 2, 3, 6, and 8.
L5 " " 1, 3, 6, and 8.

L2 has pitch patterns 2, 4, 6, and 11.
L3 " " 1, 4, 6, and 8.
L4 " " 1, 5, 7, and 9.

When all the factors which have a bearing upon the distributions of the eleven pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns as below :

1, 2, 3, and 6 in L1 and L5.
1, 2, 4, and 6 in L2 and L3.
1, 2, 5, and 7 in L4.

These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4; i.e., the pitch patterns of the local dialects would be allocated to tones as below :-

	Tone 1	Tone 2	Tone 3	Tone 4	
L1	1	2	3	6	(pitch patterns)
L5	1	2	3	6	"
L2	1	2	4	6	"
L3	1	2	4	6	"
L4	1	2	5	7	"

Long checked syllables have a maximum of two possible pitch patterns in any one local dialect, namely pitch patterns 3 and 6 in L1&5; or pitch patterns 4 and 6 in L2 and L3; or pitch patterns 5 and 7 in L4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely

pitch patterns 8 and 10 in L1 & 5
" " 9 " 11 in L2
" " 8 " 10 in L3
" " 9 " 10 in L4

On grounds of 'phonetic similarity' in starting point it has been decided that short checked syllables which oc-

cur with S-High-rising pitch (pitch pattern 8) in L1 & 5 and in L3, or with S-High-level pitch (pitch pattern 9) in L2 and L4 will be regarded as having a conditioned variant of Tone 4; while syllables with S-Mid-level pitch (pitch pattern 10) in L1 & 5; or in L3; or in L4, may be regarded as a short variant of Tone 2. Besides, in L2, short checked syllables which occur with S-Low-level pitch (pitch pattern 11) may also be regarded as having a short variant of Tone 3.

To recapitulate The PM local dialects may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. In L1 and L2, initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables; and as pitch pattern 10 (S-Mid-level pitch) in L1 & 5, L3, and L4 on short checked syllables.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) in L1 & 5; or as pitch pattern 4 (Low-level pitch) in L2 and L3; or as pitch pattern 5 (Lower-Mid-falling pitch) in L4 on smooth syllables and long checked syllables. Also, it is realised as pitch pattern 11 (S-Low-level pitch) in L2 on short checked syllables.

Tone 4 is realised as pitch pattern 6 (High-falling pitch) in L1 & 5, L2, and L3; and as pitch pattern 7 (Mid-falling pitch) in L4 on smooth syllables and long checked syllables. Also, it is realised as pitch pattern 8 (S-High-rising pitch) in L1 & 5 and in L3; or as pitch pattern 9 (S-High-level pitch) in L2 and in L4 on short checked syllables.

Diagram 4.5 : Realisations (by pitch patterns) of Phonological Tones in PM

	Tone 1	Tone 2		Tone 3			Tone 4		
	Smooth	Smooth	SC	Smooth	LC	SC	Smooth	LC	SC
L1	p.p 1	2	10	3	3	-	6	6	8
L2	1	2	-	4	4	11	6	6	9
L3	1	2	10	4	4	-	6	6	8
L4	1	2	10	5	5	-	7	7	9
L5	1	2	10	3	3	-	6	6	8

p.p = pitch pattern
SC = short checked (syllable)
LC = long checked (syllable)
(p.p) 1 = Low-rising pitch
(p.p) 2 = Mid-level pitch
3 = Low-falling pitch
4 = Low-level pitch
5 = Lower-Mid-falling pitch
6 = High-falling pitch
7 = Mid-falling pitch
8 = S-High-rising pitch
9 = S-High-level pitch
10 = S-Mid-level pitch
11 = S-Low-level pitch

Table 4.9a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of PM

Syll. type & V. Length \ Pitch Pattern	1. Low-rising	2. Mid-level	3. Low-falling	4. Low-level	5. Lower-Mid-falling	6. High-falling	7. Mid-falling	8. 5-High rising	9. 5-High-level	10. 5-Mid-level	11. 5-Low-level	
SMOOTH	hu:	mɯ:	khai			pa:						LOCALITIES 1 & 5
CHECKED SHORT								mat		nok		
CHECKED LONG			kha:t			mi:t						
SMOOTH	hu:	mɯ:		xkhai		pa:						LOCALITY 2
CHECKED SHORT									nok		mat	
CHECKED LONG				xkha:t		mi:t						
SMOOTH	hu:	mɯ:		khai		pa:						LOCALITY 3
CHECKED SHORT								mat		nok		
CHECKED LONG				kha:t		mi:t						
SMOOTH	hu:	mɯ:			khai		pa:					LOCALITY 4
CHECKED SHORT									mat	nok		
CHECKED LONG					kha:t		mi:t					

Table 4.9b. Correlation of Initial Consonant Types and Pitch Patterns of PN

Pitch Patterns / Init. cons. types	1. Low-rising	2. Mid-level	3. Low-falling	4. Low-level	5. Lower-Mid-falling	6. High-falling	7. Mid-falling	8. S-High-rising	9. S-High-level	10. S-Mid-level	11. S-Low-level	
TYPE 1	hu: 'ear'	mɯ: 'hand'	khai 'egg'			mi:t 'knife'		mat 'flea'		nok 'bird'		L 1
TYPE 2		pi: 'year'	pa: 'forest'			pa: 'aunt'		✓				
TYPE 1	hu: 'ear'	mɯ: 'hand'	khai 'egg'			mi:t 'knife'		mat 'flea'		nok 'bird'		L 5
TYPE 2	pi: 'year'		pa: 'forest'			pa: 'aunt'		kop 'frog'				
TYPE 1	hu: 'ear'	mɯ: 'hand'		kxhai 'egg'		mi:t 'knife'			nok 'bird'		mat 'flea'	L 2
TYPE 2		pi: 'year'		pa: 'forest'		pa: 'aunt'					kop 'frog'	
TYPE 1	hu: 'ear'	mɯ: 'hand'		khai 'egg'		mi:t 'knife'		mat 'flea'		nok 'bird'		L 3
TYPE 2	pi: 'year'			pa: 'forest'		pa: 'aunt'		kop 'frog'				
TYPE 1	hu: 'ear'	mɯ: 'hand'			khai 'egg'		mi:t 'knife'		mat 'flea'	nok 'bird'		L 4
TYPE 2	pi: 'year'				pa: 'forest'		pa: 'aunt'		kop 'frog'			

4.10 HTL local dialect (Tables 4.10a and b)

Final consonant and tonal restrictions As can be seen from Table 4.10a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.10b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-High-rising pitch (pitch pattern 5) are re-garded as having a conditioned variant of Tone 4, while

S-Mid-level pitch (pitch pattern 6) may be regarded as a short variant of Tone 2.

To recapitulate The HTL local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables; and as pitch pattern 6 (S-Mid-level pitch) on short checked syllables. Initial consonants of syllables which occur with S-Mid-level pitch are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (Higher-Mid-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.10a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of HTL

Pitch patterns / Syll. types & V.Length	1.Low-rising	2.Mid-level	3.Low-falling	4.Higher-Mid-falling	5.S-High rising	6.S-Mid-level
SMOOTH	hu: 'ear'	bin 'to fly'	khai 'egg'	ba:n 'village'		
CHECKED SHORT					mat 'flea'	nok 'bird'
CHECKED LONG			pi:k 'wing'	mi:t 'knife'		

Table 4.10b. Correlation of Initial Consonant Types and Pitch Patterns of HTL

Pitch patterns / Init. cons. types	1.Low-rising	2.Mid-level	3.Low-falling	4.Higher-Mid-falling	5.S-High-rising	6.S-Mid-level
TYPE 1	hu: 'ear'	na: 'rice field'	khai 'egg'	mi:t 'knife'	mat 'flea'	nok 'bird'
TYPE 2		bin 'to fly'	pi:k 'wing'	ba:n 'village'	kop 'frog'	

4.11 CKR local dialect (Tables 4.11a and b)

Final consonant and tonal restrictions As can be seen from Table 4.11a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.11b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 1, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-High-rising pitch (pitch pattern 5) are re-garded as having a conditioned variant of Tone 4, while syllables with S-Mid-level pitch (pitch pattern 6) may be

regarded as having a short variant of Tone 2.

To recapitulate The CKR local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables; and as pitch pattern 6 (S-Mid-level pitch) on short checked syllables. Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.11a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of CKR

Pitch patterns / Syll. types & V.Length	1.Low-rising	2.Mid-level	3.Low-falling	4.High-falling	5.S-High rising	6.S-Mid-level
SMOOTH	hu: 'ear'	na: 'rice field'	pha: 'to split'	ba:n 'village'		
CHECKED SHORT					mat 'flea'	nok 'bird'
CHECKED LONG			pi:k 'wing'	mi:t 'knife'		

Table 4.11b. Correlation of Initial Consonant Types and Pitch Patterns of CKR

Pitch patterns / Init. cons types	1.Low-rising	2.Mid-level	3.Low-falling	4.High-falling	5.S-High-rising	6.S-Mid-level
TYPE 1	hu: 'ear'	na: 'rice field'	pha: 'to split'	mi:t 'knife'	mat 'flea'	nok 'bird'
TYPE 2	kin 'to eat'		pi:k 'wing'	ba:n 'village'	kop 'frog'	

4.12 M(NR) local dialect (Tables 4.12a and b)

Final consonant and tonal restrictions As can be seen from Table 4.12a, there are altogether five pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, and 5 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and4 may occur with long checked syllables while only pitch pattern 5 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.12 b, all five pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the five pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely, pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have only one pitch pattern, namely pitch pattern 5 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-High-rising pitch (pitch pattern 5) are regarded as having a conditioned variant of Tone 4. The conditioning factor is whether the syllable is short and checked, or whether it is long

and checked or smooth.

To recapitulate The M(NR) local dialect may be regarded as having four phonological tones with the realisations as follows:-

Tone 1 is realised as pitch pattern 1 (Lower-Mid-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) and is restricted to smooth syllables.

Tone 3 is realised as pitch pattern 3 (Low-level pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 5 (S-High-rising pitch) on short checked syllables.

Table 4.12a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of M(NR)

Pitch patterns / Syll. types & V.Length	1.Lower-Mid-rising	2.Mid-level	3.Low-level	4.High-falling	5.S-High-rising
SMOOTH	kha: 'leg'	kin 'to eat'	pha: 'to split'	ba:n 'village'	
CHECKED SHORT					mat 'flea' nok 'bird'
CHECKED LONG			kha:t 'torn'	mi:t 'knife'	

Table 4.12b. Correlation of Initial Consonant Types and Pitch patterns of M(NR)

Pitch patterns / Init. cons. types	1.Lower-Mid-rising	2.mid-level	3.Low-level	4.High-falling	5.S-High rising
TYPE 1	kha: 'leg'	na: 'rice field'	pha: 'to split'	mi:t 'knife'	mat 'flea'
TYPE 2		kin 'to eat'	da: 'to scold'	ba:n 'village'	bet 'fishhook'

4.13 KTS local dialects (Tables 4.13a and b)

Two localities were sampled within A.KTS.

Final consonant and tonal restrictions As can be seen from Table 4.13a, there are altogether nine pitch patterns though no one locality has more than six pitch patterns and there are some slightly different pitch realisations between L1 and L2. Tonal restrictions correlated with whether the syllable is smooth or checked are set out for each locality as follows :-

Locality	Pitch patterns occurring with smooth syl.	Pitch patterns occurring with checked syl.
L1	1, 2, 3, 5	3, 5, 6, 8
L2	1, 2, 4, 5	4, 5, 7, 9

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each locality as follows:

Locality	Pitch patterns occurring with long checked	Pitch patterns occurring with short checked
L1	3, 5	6, 8
L2	4, 5	7, 9

Initial consonants and tonal restrictions As can be seen from Table 4.13b, in both localities, a total of six pitch patterns may occur though the patterns may vary from locality to locality, with initial consonant type 1, as summarised below :

Locality	Pitch patterns occurring with initial consonant type 1
L1	1, 2, 3, 5, 6, 8
L2	1, 2, 4, 5, 7, 9

The restrictions concerning syllables with initial consonant type 2 are rather more severe, as summarised as follows:

Locality	Pitch patterns occurring with initial consonant type 2
L1	2, 3, 5, 6
L2	2, 4, 5, 7

When all the factors which have a bearing upon the distributions of the nine pitch patterns are taken into account it is found that for any given syllable type there is a maximum of four possible pitch contrasts in both localities. This maximum applies to smooth syllables, for which the permitted pitch patterns in L1 and L2 have already been set out on p. 142. These four contrasting patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4. The allocation of pitch patterns, shown by the number of the pitch patterns, to phonological tones on smooth syllables is summarised below :-

	Tone 1	Tone 2	Tone 3	Tone 4
L1	1	2	3	5
L2	1	2	4	5

Long checked syllables have a maximum of two possible pitch patterns in any one locality as set out on p. 142. Pitch pattern 5 is common to both L1 and L2, and since this pattern has already been interpreted as the realisation of Tone 4 in smooth syllables, the same interpretation will be followed for long checked syllables. The other pitch patterns found on such syllables vary between 3 and 4. Since these patterns have already been interpreted as variant realisations of Tone 3 in smooth syllables, the same interpretation will be followed for long checked syllables. To sum up, long checked syllables are found to occur only with Tones 3 and 4.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in any one locality, though these vary from locality to locality between pitch patterns 6, 7, 8, and 9 as set out on p. 142. Since pitch

patterns 7 and 8 differ from pitch patterns 4 and 2 respectively in length only, there is no difficulty about assigning syllables with pitch pattern 7 to Tone 3, and syllables with pitch pattern 8 to Tone 2. Pitch patterns 6 and 9 are not found on smooth syllables, so it has been decided to use 'phonetic similarity' as a criterion for their allocation to one or other of the four tones. In this case, it has been decided, somewhat arbitrarily perhaps, to take the starting point as the measure of 'similarity', and these two patterns (6 and 9) are accordingly regarded as being conditioned variants of Tone 4, the conditioning factor being that the syllables on which they occur are short and checked.

To recapitulate The KTS local dialect may be regarded as having four phonological tones with the realisations as follows :

Tone 1 is realised as pitch pattern 1 (Lower-Mid-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables; and as pitch pattern 8 (S-Mid-level pitch) in L1 on short checked syllables. Initial consonants of syllables which occur with pitch pattern 8 are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) in L1 or as pitch pattern 4 (Low-level pitch) in L2 on smooth syllables and long checked syllables. It is also realised as pitch pattern 7 (S-Low-level pitch) in L2 on short checked syllables.

Tone 4 is realised as pitch pattern 5 (High-falling pitch) on smooth syllables and long checked syllables. It is also realised as pitch pattern 6 (S-Higher-Mid-rising pitch) in L1 or

as pitch pattern 9 (S-High-level pitch) in L2 on short checked syllables.

Diagram 4.6 : Realisations (by pitch patterns) of Phonological Tones in KTS

L1	p.p	1	2	8	3	3	-	5	5	6
L2		1	2	-	4	4	7	5	5	9

(p.p = pitch pattern)

p.p 1 = Lower-Mid-rising pitch
2 = Mid-level pitch
3 = Low-falling pitch
4 = Low-level pitch
5 = High-falling pitch
6 = S-Higher-Mid-rising pitch
7 = S-Low-level pitch
8 = S-Mid-level pitch
9 = S-High-level pitch

Table 4.13a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of KTS

PITCH PATTERNS / Syll. Types & V. Length	1. Lower-Mid-rising	2. Mid-level	3. Low-falling	4. Low-level	5. High-falling	6. S-Higher Mid-rising	7. S-Low-level	8. S-Mid-level	9. S-High-level	
SMOOTH	hu: 'ear'	kin 'to eat'	pa: 'forest'		tom 'to boil'					LOCALITY 1
CHECKED SHORT						mat 'flea'		nok 'bird'		
CHECKED LONG			pi:k 'wing'		mi:t 'knife'					
SMOOTH	hu: 'ear'	kin 'to eat'		pa: 'forest'	tom 'to boil'					LOCALITY 2
CHECKED SHORT							mat 'flea'		nok 'bird'	
CHECKED LONG				pi:? 'wing'	mi:t 'knife'					

Table 4.13b. Correlation of Initial Consonant Types and Pitch Patterns of KTS

PITCH PATTERNS / Init. cons. types	1. Lower-Mid-rising	2. Mid-level	3. Low-falling	4. Low-level	5. High-falling	6. S-Higher Mid-rising	7. S-Low-level	8. S-Mid-level	9. S-High-level	
TYPE 1	hu: 'ear'	na: 'ricefield'	khai 'egg'		mi:t 'knife'	mat 'flea'		nok 'bird'		L 1
TYPE 2		kin 'to eat'	pa: 'forest'		tom 'to boil'	kop 'frog'				
TYPE 1	hu: 'ear'	na: 'ricefield'		khai 'egg'	mi:t 'knife'		mat 'flea'		nok 'bird'	L 2
TYPE 2		kin 'to eat'		pa: 'forest'	tom 'to boil'		kop 'frog'			

4.14 SN local dialect (Tables 4.14a and b)

Final consonant and tonal restrictions As can be seen from Table 4.14a, there are altogether six pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.14b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 1, 2, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-Higher-Mid-rising pitch (pitch pattern 5) are regarded as having a conditioned variant of Tone 4; while syllables with S-Higher-Mid-level pitch (pitch pat-

tern 6) may be regarded as having a conditioned variant of Tone 2. The conditioning factor in both cases is whether the syllable is short and checked, or whether it is long and checked or smooth.

To recapitulate The SN local dialect may be regarded as having four phonological tones with the realisations as follows:-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables and as pitch pattern 6 (S-Higher-Mid-level pitch) on short checked syllables.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) on smooth syllables and long checked syllables; and as pitch pattern 5 (S-Higher-Mid-rising pitch) on short checked syllables.

Table 4.14a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of SN

Pitch patterns / Syll. types & V. Length	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-Higher Mid-rising	6. S-Higher Mid-level
SMOOTH	ɦu: 'ear'	da:u 'star'	khai 'egg'	pa: 'aunt'		
CHECKED SHORT					mat 'flea'	mat 'to tie'
CHECKED LONG			kha:t 'torn'	mi:t 'knife'		

Table 4.14b. Correlation of Initial Consonant Types and Pitch Patterns of SN

Pitch patterns / Init. cons. types	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-Higher Mid-rising	6. S-Higher Mid-level
TYPE 1	ɦu: 'ear'	na: 'rice field'	khai 'egg'	mi:t 'knife'	mat 'flea'	mat 'to tie'
TYPE 2	ta: 'eye'	da:u 'star'	pa: 'forest'	pa: 'aunt'	kop 'frog'	

4.15 SK local dialect (Tables 4.15a and b)

Two localities were studied within A.SK

The SK local dialect in L1 has seven pitch patterns; while the local dialect in L2 has six pitch patterns. These will be illustrated as follows :-

Locality	Pitch patterns
L1	1, 2, 3, 5, 6, 7, 9
L2	1, 2, 4, 6, 8, 10

Final consonant and tonal restrictions As can be seen from Table 4.15a, in L1 only pitch patterns 1, 2, 3, 5, and 6 may occur with smooth syllables, while only pitch patterns 5, 6, 7, and 9 may occur with checked syllables.

In L2, only pitch patterns 1, 2, 4, and 6 may occur with smooth syllables; while only pitch patterns 4, 6, 8, and 10 may occur with checked syllables. These may be set out as follows :-

Locality	Pitch patterns occurring with smooth syl.	Pitch patterns occurring with checked syl.
L1	1, 2, 3, 5, 6	5, 6, 7, 9
L2	1, 2, 4, 6	4, 6, 8, 10

Vowel length and tonal restrictions In L1, only pitch patterns 5 and 6 may occur with long checked syllables, while only pitch patterns 7 and 9 may occur with short checked syllables.

In L2, only pitch patterns 4 and 6 may occur with long checked syllables while only pitch patterns 8 and 10 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.15b, in L1 a total of seven pitch patterns may occur with initial consonant type 1, but only pitch patterns 1, 3, 5, 6, and 7 may occur with initial consonant type 2.

In L2, a total of six pitch patterns may occur with

initial consonant type 1, but only pitch patterns 2, 4, 6, and 8 may occur with initial consonant type 2.

When all the factor which have a bearing upon the distributions of the seven pitch patterns in L1, or six pitch patterns in L2 are taken into account, it is found that for any given syllable type there is a maximum of five possible pitch contrasts in L1, or four possible pitch contrasts in L2. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, 5, and 6 in L1; or with pitch patterns 1, 2, 4, and 6 in L2. These pitch patterns must therefore be regarded as the phonetic realisations of five phonological tones, Tones 1, 2, 3, 4, and 5 in L1; or four phonological tones, Tones 1, 2, 3, and 4 in L2. In fact, the pitch patterns of these two local dialects would be allocated to phonological tones as follows :-

	Tone 1	Tone 2	Tone 3	Tone 4	Tone 5
L1	p.p 1	2	3	5	6
L2	1	2	4	6	-

(p.p = pitch pattern)

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 in L1; or 4 and 6 in L2. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 4 or 5 in L1; or may occur with either Tone 3 or 4 in L2.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 7 and 9 in L1, or pitch patterns 8 and 10 in L2. On grounds of 'phonetic similarity' it has been decided that

In L1, S-Low-level pitch (pitch pattern 7) and S-High-level pitch (pitch pattern 9) may be regarded as being short variants of Tone 4 and Tone 3 respectively.

In L2, taking the starting point as the measure of 'similarity', it has been decided, somewhat arbitrarily perhaps, to regard pitch pattern 8 (S-Higher-Mid-rising pitch) as a conditioned variant of Tone 4. Pitch pattern 10 may

be regarded as a short variant of Tone 2.

To recapitulate The SK local dialects may be regarded as having five and four phonological tones. That is, five phonological tones in L1, and four phonological tones in L2. The realisations of these tones are as follows :

L1 : 5-Tone system

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 3 is realised as pitch pattern 3 (High-level pitch) on smooth syllables and as pitch pattern 9 (S-High-level pitch) on short checked syllables.

Tone 4 is realised as pitch pattern 5 (Low-level pitch) on smooth syllables and long checked syllables. It is also realised as pitch pattern 7 (S-Low-level pitch) on short checked syllables.

Tone 5 is realised as pitch pattern 6 (High-falling pitch) on smooth and long checked syllables.

L2 : 4-Tone System

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables and as pitch pattern 10 (S-Mid-level pitch) on short checked syllables.

Tone 3 is realised as pitch pattern 4 (Low-falling pitch) on smooth syllables and long checked syllables.

Tone 4 is realised as pitch pattern 6 (High-falling pitch) on smooth and long checked syllables. It is also realised as pitch pattern 8 (S-Higher-Mid-rising pitch) on short checked syllables.

Diagram 4.7 : Realisations (by pitch patterns) of Phonological Tones in SK

		Tone 1	Tone 2		Tone 3			Tone 4			Tone 5	
		Smooth	Smooth	SC	Sm	LC	SC	Sm	LC	SC	Sm	LC
L1	p.p	1	2	-	3	-	9	5	5	7	6	6
L2		1	2	10	4	4	-	6	6	8	-	-

(p.p = pitch pattern ; Sm = smooth ; LC = long checked; SC = short checked)

p.p 1 = Low-rising pitch
2 = Mid-level pitch
3 = High-level pitch
4 = Low-falling pitch
5 = Low-level pitch
6 = High-falling pitch
7 = S-Low-level pitch
8 = S-Higher-Mid-rising pitch
9 = S-High-level pitch
10 = S-Mid-level pitch

Table 4.15a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of SK

Pitch Patterns / Syll. types & V. length	1. Low-rising	2. Mid-level	3. High-level	4. Low-falling	5. Low-level	6. High-falling	7. S-Low-level	8. S-Higher Mid-rising	9. S-High level	10. S-Mid-level	
SMOOTH	˜hu: 'ear'	phi: 'older sibling'	mɯ: 'hand'		khau 'rice'	pa: 'aunt'					LOCALITY 1
CHECKED SHORT							mat 'flea'		nok 'bird'		
CHECKED LONG					kha:t 'torn'	mi:t 'knife'					
SMOOTH	hu: 'ear'	mɯ: 'hand'		khau 'rice'		pa: 'aunt' phi: 'older sibling'					LOCALITY 2
CHECKED SHORT								mat 'flea'		nok 'bird'	
CHECKED LONG				kha:t 'torn'		mi:t 'knife'					

Table 4.15b. Correlation of Initial Consonant Types and Pitch Patterns of SK

Pitch Pattern / Init. cons. types	1. Low-rising	2. Mid-level	3. High-level	4. Low-falling	5. Low-level	6. High-falling	7. S-Low-level	8. S-Higher Mid-rising	9. S-High level	10. S-Mid-level	
TYPE 1	˜hu: 'ear'	phi: 'older sibling'	mɯ: 'hand'		khau 'rice'	mi:t 'knife'	mat 'flea'		nok 'bird'		L 1
TYPE 2	pi: 'year'		pa: 'forest'		pɔ:t 'lung'	pa: 'aunt'	kop 'frog'				
TYPE 1	hu: 'ear'	mɯ: 'hand'		khau 'rice'		phi: 'older sibling' mi:t 'knife'		mat 'flea'		nok 'bird'	L 2
TYPE 2		pi: 'year'		pa: 'forest'		pa: 'aunt'		kop 'frog'			

4.16 PC local dialect (Tables 4.16a and b)

Final consonant and tonal restrictions As can be seen from Table 4.16a, there are altogether seven pitch patterns in this local dialect. However, only pitch patterns 1, 2, 3, 4, and 5 may occur with smooth syllables, while only pitch patterns 3, 4, 6, and 7 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 6 and 7 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.16b, all seven pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 3, 4, and 6 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the seven pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of five possible pitch contrasts. This maimum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, 4, and 5. These pitch patterns must therefore be regarded as the phonetic realisations of five phonological tones, Tones 1, 2, 3, 4, and 5.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 6 and 7 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, 4, and 5. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-Lower-Mid-level pitch (pitch pattern 6) are regarded as having a conditioned variant of Tone 2, while syllables with S-High-rising pitch (pitch pattern 7) may be regarded

as having a conditioned variant of Tone5. The conditioning factor in both cases is whether the syllable is short and checked, or whether it is long and checked or smooth.

To recapitulate The PC local dialect may be regarded as having five phonological tones with the realisations as follows:-

Tone 1 is realised as Low-rising pitch (pitch pattern 1) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as Mid-level pitch (pitch pattern 2) on smooth syllables; and as S-Lower-Mid-level pitch (pitch pattern 6) on short checked syllables.

Tone 3 is realised as Low-falling pitch (pitch pattern 3) on smooth syllables and long checked syllables.

Tone 4 is realised as High-falling pitch (pitch pattern 4) on smooth syllables and long checked syllables.

Tone 5 is realised as High-level pitch (pitch pattern 5) on smooth syllables; and as S-High-rising pitch (pitch pattern 7) on short checked syllables.

Table 4.16a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of PC

Pitch patterns / Syll. types & V.Length	1.Low-rising	2.Mid-level	3.Low-falling	4.High-falling	5.High-level	6.Lower Mid-level	7.High-rising
SMOOTH	kha: 'leg'	ta: 'eye'	pa: 'forest'	phi: 'older sibling'	na:m 'water'		
CHECKED SHORT						mat 'flea'	nok 'bird'
CHECKED LONG			kha:t 'torn'	mi:t 'knife'			

Table 4.16b. Correlation of Initial Consonant Types and Pitch Patterns of PC

Pitch pattern / Init. cons. types	1.Low-rising	2.Mid-level	3.Low-falling	4.High-falling	5.High-level	6.Lower-Mid-level	7.High-rising
TYPE 1	kha: 'leg'	na: 'ricefield'	kha:t 'torn'	phi: 'older sibling'	na:m 'water'	mat 'flea'	nok 'bird'
TYPE 2		ta: 'eye'	pa: 'forest'	pa: 'aunt'		tap 'liver'	

4.17 PTC local dialect (Tables 4.17a and b)

Final consonant and tonal restrictions As can be seen from Table 4.17a, there are altogether six pitch pattern in this local dialect. However, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables, while only pitch patterns 3, 4, 5, and 6 may occur with checked syllables.

Vowel length and tonal restrictions Only pitch patterns 3 and 4 may occur with long checked syllables while only pitch patterns 5 and 6 may occur with short checked syllables.

Initial consonants and tonal restrictions As can be seen from Table 4.17b, all six pitch patterns may occur with initial consonant type 1; but only pitch patterns 2, 3, 4, and 5 may occur with initial consonant type 2.

When all the factors which have a bearing upon the distributions of the six pitch patterns are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns 1, 2, 3, and 4. These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4.

Long checked syllables have a maximum of two possible pitch patterns, namely pitch patterns 3 and 4. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely pitch patterns 5 and 6 which may be said to be in complementary distribution with pitch patterns 1, 2, 3, and 4. On grounds of 'phonetic similarity' it has been decided in this thesis, somewhat arbitrarily perhaps, that short checked syllables which occur with S-High-rising pitch (pitch pattern 5) are regarded as having a conditioned variant of Tone 4, while syllables with S-Mid-level (pitch pattern 6) may be regarded as having a short

variant of Tone 2.

To recapitulate The PTC local dialect may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as Low-rising pitch (pitch pattern 1) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as Mid-level pitch (pitch pattern 2) on smooth syllables; and as S-Mid-level pitch (pitch pattern 6) on short checked syllables. Initial consonants of syllables which occur with S-Mid-level pitch are always of type 1.

Tone 3 is realised as Low-falling pitch (pitch pattern 3) on smooth syllables and long checked syllables.

Tone 4 is realised as High-falling pitch (pitch pattern 4) on smooth syllables and long checked syllables; and as S-High-rising pitch (pitch pattern 5) on short checked syllables.

Table 4.17a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of PTC

Pitch patterns / Syll. types & V. Length	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-High-rising	6. S-Mid-level
SMOOTH	hu: 'ear'	bin 'to fly'	khai 'egg'	na:m 'water'		
CHECKED SHORT					mat 'flea'	nok 'bird'
CHECKED LONG			kha:t 'torn'	mi:t 'knife'		

Table 4.17b. Correlation of Initial Consonant Types and Pitch Patterns of PTC

Pitch pattern / Init. cons. types	1. Low-rising	2. Mid-level	3. Low-falling	4. High-falling	5. S-High-rising	6. S-Mid-level
TYPE 1	hu: 'ear'	mɯ: 'hand'	khai 'egg'	na:m 'water'	mat 'flea'	nok 'bird'
TYPE 2		pi: 'year'	ba: 'shoulder'	ba: 'crazy'	bet 'fishhook'	

4.18 CC local dialects (Tables 4.18a and b)

Two localities were studied within A.CC.

The CC local dialect in L1 has five pitch patterns; while the local dialect in L2 has six pitch patterns. That is,

Locality	Pitch patterns
L1	1, 3, 4, 5, 6
L2	2, 3, 4, 5, 6, 7

Final consonant and tonal restrictions As can be seen from Table 4.18a, in L1 only pitch patterns 1, 3, 4, and 5 may occur with smooth syllables, while only pitch patterns 4, 5, and 6 may occur with checked syllables.

In L2, only pitch patterns 2, 3, 4, and 5 may occur with smooth syllables; while only pitch patterns 4, 5, 6, and 7 may occur with checked syllables. These may be set out as follows :-

Locality	Pitch patterns occurring with smooth syl.	Pitch patterns occurring with checked syl.
L1	1, 3, 4, 5	4, 5, 6
L2	2, 3, 4, 5	4, 5, 6, 7

Vowel length and tonal restrictions Tonal restrictions correlated with vowel length, which only apply to checked syllables, are set out for each locality as follows :-

Locality	Pitch patterns occurring with long checked	Pitch patterns occurring with short checked
L1	4, 5	6
L2	4, 5	6, 7

Initial consonant and tonal restrictions As can be seen from Table 4.18b, in L1 a total of five pitch patterns may occur with initial consonant type 1, but only pitch patterns 3, 4, 5, and 6 may occur with initial consonant type2.

In L2, a total of six pitch patterns may occur with initial consonant type 1, but only pitch patterns 3, 4, 5,

and 6 may occur with initial consonant type 2.

When all the factor which have a bearing upon the distributions of the five pitch patterns in L1, or six pitch patterns in L2, are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts in both localities. This maximum applies to smooth syllables, for which the permitted pitch patterns have already been set out on p. 161. These four contrating patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4. The allocation of pitch realisations, shown by the number of the pitch patterns, to phonological tones on smooth syllables is summarised below :-

Locality	Tone 1	Tone 2	Tone 3	Tone 4
L1	p.p 1	3	4	5
L2	2	3	4	5

(p.p = pitch pattern)

Long checked syllables have been shown to have a maximum of two possible pitch patterns in both localities, as set out on p. 161. Pitch patterns 4 and 5 are common to both localities, and since these patterns have already been interpreted as the realisations of Tone 3 and 4 respectively, the same interpretation will be followed for long checked syllables. To sum up, long checked syllables are found to occur only with Tones 3 and 4.

Short checked syllables are also restricted to a maximum of two possible pitch patterns in L2, but only one possible pitch pattern in L1, as shown on p. 161. Since pitch pattern 7 differs from pitch pattern 3 in length only, there is no difficulty about assigning syllables with this pattern to Tone 2. Pitch pattern 6 is not found on smooth syllables so it has been decided to use 'phonetic similarity' as a criterion for its allocation to one or other of the four Tones. In this case, it has been decided, somewhat arbitrarily perhaps, to take the starting pitch as the measure of 'similarity', and this pattern is accordingly regarded as being a conditioned variant of Tone 4, the conditioning

factor being that the syllables on which they occur are short and checked.

To recapitulate The CC local dialects may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) in L1, or as pitch pattern 2 (Lower-Mid-rising pitch) in L2, as is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 3 (Mid-level pitch) on smooth syllables; it is also realised as pitch pattern 7 (S-Mid-level pitch) in L2 on short checked syllables.

Tone 3 is realised as pitch pattern 4 (Low-falling pitch) on smooth and long checked syllables.

Tone 4 is realised as pitch pattern 5 (High-falling pitch) on smooth and long checked syllables. It is also realised as pitch pattern 6 (S-High-rising pitch) on short checked syllables.

Diagram 4.8 : Realisations (by pitch patterns) of Phonological Tones in CC

Locality		Tone 1	Tone 2		Tone 3		Tone 4		
		Smooth	Smooth	SC	Smooth	LC	Smooth	LC	SC
L1	p.p	1	3	-	4	4	5	5	6
L2		2	3	7	4	4	5	5	6

(LC = long checked; p.p = pitch pattern; SC = short checked)

p.p 1 = Low-rising pitch
p.p 2 = Lower-Mid-rising pitch
3 = Mid-level pitch
4 = Low-falling pitch
5 = High-falling pitch
p.p 6 = S-High-rising
7 = S-Mid-level

Table 4.18a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of CC

Pitch patterns / Syll. types & V.Length	1.Low-rising	2.Lower-Mid-rising	3.Mid-level	4.Low-falling	5.High-falling	6.S-High rising	7.S-Mid-level	LOCALITY
SMOOTH	hu: 'ear'		pi: 'year'	khai 'egg'	pa: 'aunt'			1
CHECKED SHORT						mat 'flea' lak 'to steal'		1
CHECKED LONG				ʔa:p 'to bathe'	mi:t 'knife'			1
SMOOTH		hu: 'ear'	pi: 'year'	khai 'egg'	pa: 'aunt'			2
CHECKED SHORT						mat 'flea'	lak 'to steal'	2
CHECKED LONG				ʔa:p 'to bathe'	mi:t 'knife'			2

Table 4.18b. Correlation of Initial Consonant Types and Pitch Patterns of CC

Pitch patterns / Init. cons. types	1.Low-rising	2.Lower-Mid-rising	3.Mid-level	4.Low-falling	5.High-falling	6.S-High rising	7.S-Mid level	
TYPE 1	hu: 'ear'		na: 'ricefield'	khai 'egg'	na:m 'water'	mat 'flea'		1
TYPE 2			pi: 'year'	kai 'chicken'	ba: 'crazy'	dip 'saw'		1
TYPE 1		hu: 'ear'	na: 'ricefield'	khai 'egg'	na:m 'water'	mat 'flea'	lak 'to steal'	2
TYPE 2			pi: 'year'	kai 'chicken'	ba: 'crazy'	dip 'saw'		2

4.19 KB local dialects (Tables 4.19a and b)

Four localities were sampled within A.KB.

Final consonant and tonal restrictions As can be seen from Table 4.19a, there are altogether eight pitch patterns but only a total of six pitch patterns may occur in each local dialect in this Amphoe. That is :-

pitch patterns 1, 2, 3, 4, 6, and 7 in L1 & 3
" " 1, 2, 3, 5, 6, and 7 in L2
" " 1, 2, 3, 4, 6, and 8 in L4.

However, in L1 & 3, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables; while pitch patterns 3, 4, 6 and 7 may occur with checked syllables.

In L2, only pitch patterns 1, 2, 3, and 5 may occur with smooth syllables; while only pitch patterns 3, 5, 6, and 7 may occur with checked syllables.

In L4, only pitch patterns 1, 2, 3, and 4 may occur with smooth syllables; while only pitch patterns 3, 4, 6, and 8 may occur with checked syllables.

Vowel length and tonal restrictions In L1 & 3, only pitch patterns 3 and 4 may occur with long checked syllables; while only pitch patterns 6 and 7 may occur with short checked syllables.

In L2, only pitch patterns 3 and 5 may occur with long checked syllables; while only pitch patterns 6 and 7 may occur with short checked syllables.

In L4, only pitch patterns 3 and 4 may occur with long checked syllables; while only pitch patterns 6 and 8 may occur with short checked syllables.

Initial consonant and tonal restrictions As can be seen from Table 4.19b, a total of six pitch patterns in each local dialect may occur with initial consonant type 1 but no local dialect has more than four possible pitch patterns with initial consonant type 2, as follows :

L1 & 3 have pitch patterns 2, 3, 4, and 6.

L2 has pitch patterns 2, 3, 5, and 6.
L4 " " 2, 3, 4, and 6.

When all the factors which have a bearing upon the distributions of the six pitch patterns occuring in each local dialect are taken into account, it is found that for any given syllable type there is a maximum of four possible pitch contrasts. This maximum applies to smooth syllables, which may occur with pitch patterns as below :

1, 2, 3, and 4 in L1 & 3 and in L4
1, 2, 3, and 5 in L2

These pitch patterns must therefore be regarded as the phonetic realisations of four phonological tones, Tones 1, 2, 3, and 4. In fact, the pitch patterns of the local dialects would be allocated to tones as below :

	Tone 1	Tone 2	Tone 3	Tone 4	
L1&3	1	2	3	4	(pitch patterns)
L2	1	2	3	5	"
L4	1	2	3	4	"

Long checked syllables have a maximum of two possible pitch patterns in any one local dialect, namely pitch patterns 3 and 4 in L1 & 5 and in L4; or pitch patterns 3 and 5 in L2. Since these patterns coincide with two of those found with smooth syllables, one may say that long checked syllables may occur with either Tone 3 or 4.

Short checked syllables have also a maximum of two possible pitch patterns, namely

pitch patterns 6 and 7 in L1 & 5 and in L2
" " 6 " 8 in L4.

On grounds of 'phonetic similarity' in starting point it has been decided that S-High-rising pitch will be regarded as being a conditioned variant of Tone 4. S-Mid-level pitch will be regarded as a short variant of Tone 2; while S-Mid-falling pitch, only occurring in L4, will be regarded as being a conditioned variant of Tone 2.

To recapitulate The KB local dialects may be regarded as having four phonological tones with the realisations as follows :-

Tone 1 is realised as pitch pattern 1 (Low-rising pitch) and is restricted to smooth syllables. Initial consonants are always of type 1.

Tone 2 is realised as pitch pattern 2 (Mid-level pitch) on smooth syllables;and as S-Mid-level pitch (pitch pattern 7) in L1 & 3 and 2, or as S-Mid-falling pitch (pitch pattern 8) in L4 on short checked syllables. Initial consonants of syllables which occur with pitch patterns 7 and 8 are always of type 1.

Tone 3 is realised as pitch pattern 3 (Low-falling pitch) on smooth and long checked syllables.

Tone 4 is realised as pitch pattern 4 (High-falling pitch) in L1 & 3 and in L4; or as pitch pattern 5 (Higher-Mid-falling pitch) in L2 on smooth syllables and long checked syllables. It is also realised as pitch pattern 6 (S-High-rising pitch) on short checked syllables.

Diagram 4.9 :Realisations (by pitch patterns) of Phonological Tones in KB

	Tone 1	Tone 2		Tone 3		Tone 4		
	Smooth	Smooth	SC	Smooth	LC	Smooth	LC	SC
L1	p.p 1	2	7	3	3	4	4	6
L2	1	2	7	3	3	5	5	6
L3	1	2	7	3	3	4	4	6
L4	1	2	8	3	3	4	4	6

p.p 1 = Low-rising pitch; 6 = S-High-rising pitch
2 = Mid-level pitch; 7 = S-Mid-level "
3 = Low-falling pitch; 8 = S-Mid-falling "
4 = High-falling pitch;
5 = Higher-Mid-falling pitch

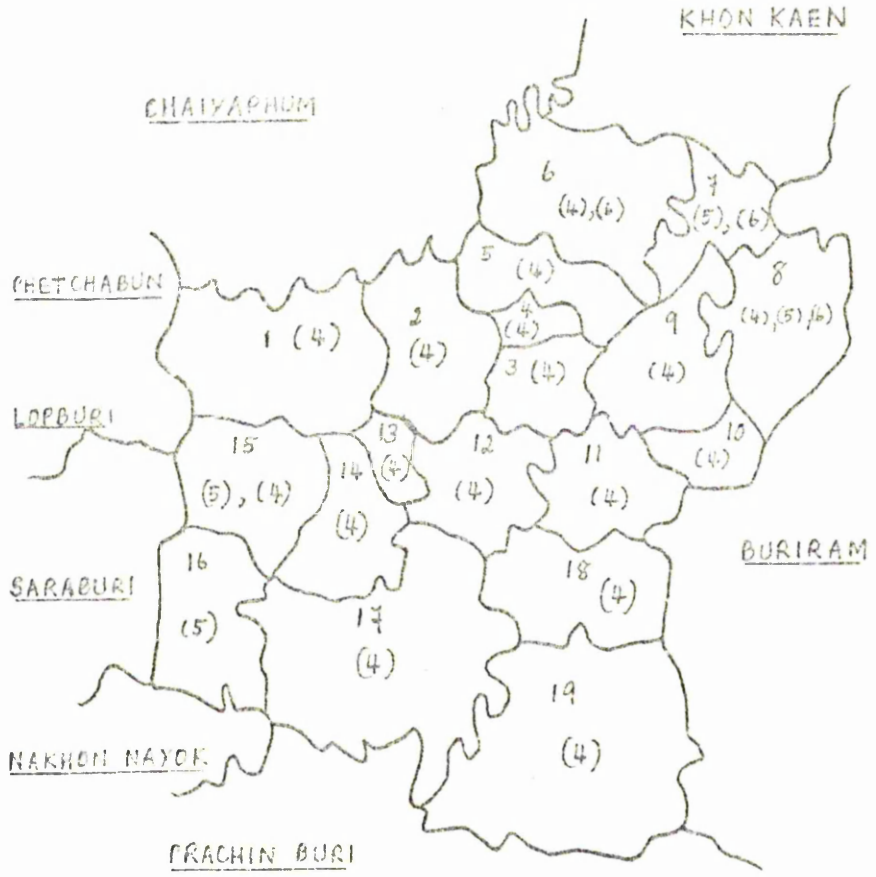
Table 4.19a. Correlation of Pitch Patterns with Syllable Types and Vowel Length of KB

Pitch pattern / Syll. Types & V. length	1. low-rising	2. Mid-level	3. low-falling	4. High-falling	5. High-er-Mid-falling	6. S-High-rising	7. S-Mid-level	8. S-Mid falling	
SMOOTH	hu: 'ear'	pi: 'year'	khai 'egg'	ba: 'crazy'					L 1 & 3
CHECKED SHORT						met 'flea'	nok 'bird'		
CHECKED LONG			kha:t 'horn'	mi:t 'knife'					
SMOOTH	hu: 'ear'	pi: 'year'	khai 'egg'		ba: 'crazy'				L 2
CHECKED SHORT						mat 'flea'	nok 'bird'		
CHECKED LONG			kha:t 'horn'		mi:t 'knife'				
SMOOTH	hu: 'ear'	pi: 'year'	khai 'egg'	ba: 'crazy'					L 4
CHECKED SHORT						mat 'flea'		nok 'bird'	
CHECKED LONG			kha:t 'horn'	mi:t 'knife'					

Table 4.19b. Correlation of Initial Consonant Types and Pitch Patterns

Pitch pattern / Init. cons. types	1.Low-rising	2.Mid-level	3.Low-falling	4.High-falling	5.High-er-Mid-falling	6.S-High rising	7.SMid level	8.S-Mid falling	
TYPE 1	hu: 'ear'	mu: 'hand'	khai 'egg'	mi:t 'knife'		mat 'flea'	nok 'bird'		L 1 & 3
TYPE 2		pi: 'year'	pa: 'forest'	pa: 'aunt'		bet 'fishhook'			
TYPE 1	hu: 'ear'	mu: 'hand'	khai 'egg'		mi:t 'knife'	mat 'flea'	nok 'bird'		L 2
TYPE 2		pi: 'year'	pa: 'forest'		pa: 'aunt'	bet 'fishhook'			
TYPE 1	hu: 'ear'	mu: 'hand'	khai 'egg'	mi:t 'knife'		mat 'flea'		nok 'bird'	L 4
TYPE 2		pi: 'year'	pa: 'forest'	pa: 'aunt'		bet 'fishhook'			

Diagram 4.10 : Distribution of Phonological Tones in NR



The number of phonological tones is shown by the numeral number in the brackets.

CHAPTER 5

RELATIONS BETWEEN THE TONAL SYSTEMS OF LOCAL DIALECTS OF CHANGWAT NR AND THE PROTO-TAI SYSTEM

The most striking difference between the Tai dialects is the variation in the tonal system - both in the number of tones in a given dialect and in the phonetic realisations. So cognate words in different dialects are usually very similar in their segmental phonemes but may have very different tones. These can be seen clearly in local dialects within the province of NR as set out in the previous chapter.

The matter is made more complicated by the fact that the actual tone that may occur varies according to the structure of the syllable. It is found that distribution is related to two syllable types, 'live' or 'smooth', and 'dead' or 'checked', which are known as 'kham pen' and 'kham tai' respectively in Standard Thai. In some Tai dialects the position is even more complicated, as there are not only sometimes more tones in the system, but also more restrictions on their use, depending this time on the kind of initial consonants. In Tai dialect study, the interpretation of tonal and initial consonant features and their relations is commonly carried out with diachronic implications in terms of a reconstructed Proto-Tai. In fact, we have to look at what is thought to have been the history of the Tai sound system to help us to understand the distribution of the modern tones in each local dialect and to make assumptions about their development from their original forms.

From a study of all the Tai dialects, historical linguists now believe that the present tonal systems of all Tai dialects are the result of the development of the original tonal system, namely Proto-Tai tones. It is assumed that Proto-Tai had four tones which are conventionally labelled A, B, C, and D. Tones A, B, and C occurred on smooth syllables, those ending in a sonorant, and tone D

operated on only checked syllables, those ending in an obstruent. It is apparent that tone D only occurred in the special type of syllable in which the distinctions of tones may be said to be neutralised. It is supposed that, as in Chinese and many of the Far-East languages, there was at some stage a split in these four Proto-Tones, which was conditioned by the phonetic nature of the initial consonants of syllables. The features of the initial consonants which influenced the subsequent development of tones may be called laryngeal features, namely voicing, aspiration, and glottalisation. All these features are connected with the position, such as open, closed, etc. or with the condition, such as tense, vibrating, etc. of the vocal cords. As tones are connected with the action of the vocal cords, it is reasonable and natural to suppose that these laryngeal features may have influenced tones. In most modern dialects it is apparent that what had been one tone became differentiated into two depending upon whether the initial consonant at the time of the split was voiced or voiceless. It is recognised by phoneticians that vowels tend to be lower in fundamental frequency after voiced consonants than after voiceless consonants. Although this difference may often be too small a change to be perceptible, it is assumed that in languages like Tai and Chinese, this change eventually became big enough to give rise to two series of tones, one relatively high, one relatively low. So we presuppose two series of tones as follows :-

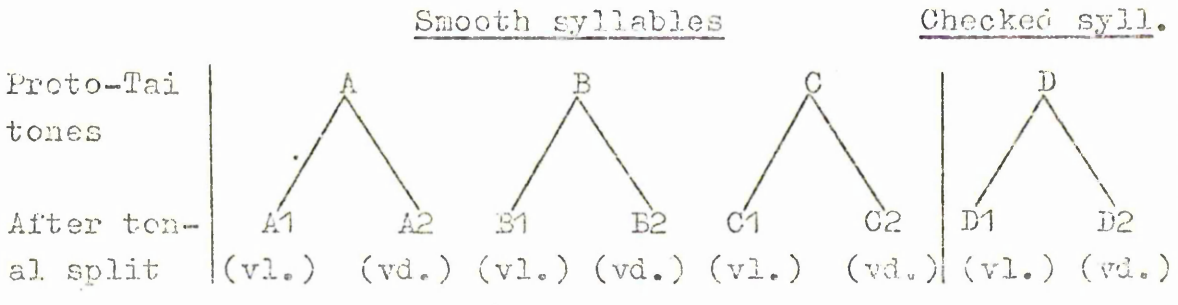


Diagram 5.1 : Binary split of Proto-Tai Tones, influenced by voiced/voiceless features of initial consonants at the time of split

These two series were at first allotones as long as the voiced and voiceless distinction was maintained in the initial consonants. But in the course of time this distinction began to be lost in nearly all dialects, so that voiced plosives and fricatives became voiceless, while voiceless nasals and liquids merged with the voiced ones. At this stage the tonal difference became phonemic. These changes, resulting in a decrease in the number of consonants and an increase in the number of tones, are sometimes referred to as the Great Tone Split. However, subsequent changes in consonants in the various languages and dialects have obscured these conditioning features, which therefore must be inferred. The evidence of this old distinction between voiceless and voiced consonants is still preserved in the Thai writing system though it has everywhere been lost in the actual pronunciation in the modern Thai dialects. For example, the present voiced bilabial nasal in Standard Thai has two written forms, that is, ‹หม› and ‹ม› which are supposed to represent the old voiceless [m̥], which is going to be represented by [hm] henceforth, and voiced [m] nasals respectively. Since voiceless nasals have become voiced in practically all dialects, this distinction between old voiced and voiceless consonants is reflected in the tonal distinctions closely associated with initial consonants. Every modern dialect has some voiced initial consonants which must have been voiceless at one time and vice versa. This means that the phonetics of the consonants of a modern dialect can be of no help towards the historical understanding of the present tonal systems.

In addition to the influence of the voiced and voiceless distinction on tones, other laryngeal features, that is, aspiration and glottalisation as recently mentioned, also had an effect. It is found that the conditioning factors were different in different Tai dialects. In the D tone there was a further split according to whether the vowel was short or long, giving us DS and DL. It should be noted that the tones developed from original tone D can usually be identified with other tones. In fact, there is a general rule that in all known Tai dialects, the actual

tones developed in tone category D always coincide with certain actual tones developed in tone categories A, B, and C.

According to the influence they may have on tones, the Proto-Tai initials may be distinguished, following Gedney[1], into four classes as follows :-

I. voiceless friction sounds such as *s, *hm, *ph, etc.
II. voiceless unaspirated stops such as *p, *t, *k, etc.
III. glottal stop and glottalised sounds; *?, *?b, etc.
IV. voiced sounds such as *b, *m, *l, *z, etc.

Thus the theoretical maximum number of possible tonal distinctions that could arise from various types of tonal splits conditioned by the nature of the four classes of old initial consonants may be illustrated as follows :-

Proto-Tai initials at time of tonal splits		Proto-Tai tones				
		Smooth			Checked	
		A	B	C	DS	DL
I	voiceless friction sounds, *s, *hm, *ph, etc.	1	5	9	13	17
II	voiceless unaspirated stops, *p, *t, *k, etc.	2	6	10	14	18
III	glottal stop and glottalised sounds, *?, *?b, etc.	3	7	11	15	19
IV	voiced sounds, such as *m, *l, *z, etc.	4	8	12	16	20

The above box diagram was devised by Gedney along with a check-list of test words to use in dialect work. As far as we know, all Tai dialects can be fitted into the boxes on this tone test diagram. In fact, no Tai dialect shows anything like as many as twenty tonal distinctions. There is always overlapping of tones, but this overlapping of tones varies from dialect to dialect. Gedney's test words are 64 common words[2] which have recognisable cognate forms

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[1] Gedney, W.J., 1969. "A checklist for determining tones in Tai dialects."

[2] See Appendix 2.

on a wide variety of dialects, belonging to every branch of the family[1], and which illustrate each of the four Proto-Tai tones and each of the four consonant classes, box by box. For each box, there are at least three test words at hand. This is because firstly, certain among even these very common words may not occur in the dialect under consideration; and secondly, perhaps in a particular dialect or group of dialects one of the test words may have the 'wrong' i.e. irregular tone because of local distortion or interdialectal borrowing.

Fieldworkers and linguists working on the Tai languages have found that by using a combination of Gedney's checklist and the box diagram it is possible to master the tonal system of a Tai dialect "within the first hour or two of work with the informant" (Gedney, p. 427), whereas the usual laborious field procedure of collecting words and trying to discover by comparing one with another which have the same tone and which ones differ may take a very long time, and even then, " fieldworkers ..... not infrequently discover, after days or even weeks or months of work, that a tonal contrast has been overlooked, so that it is necessary then to reexamine all the data previously collected " (Gedney, p. 427). As has been previously stated (see p. 5), Gedney's checklist, or adaptations of it, were used in the collection of the material that forms the basis of this thesis. Without this short-cut it would not have been possible in the time available to work out the tonal systems of the local dialects in nineteen Amphoes as here presented.

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[1]The Tai languages have been categorised into three branches by Li, Fang-Kuei (1960) :- the southwestern group, the central group, and the northern group. This classification is based on three types of evidence, that is, the distribution of certain special phonological features in the vocabulary; the distribution of vocabulary; and lastly the specific phonological development characteristic of a certain group.

In the rest of this chapter, the tones of each local dialect in Changwat NR described in chapter 4 will be plotted in the tone test diagram in order to illustrate the tone system of each local dialect and at the same time to compare systems between local dialects. The advantage of comparing the tonal systems in this way is that it is possible to form some picture of the historical sources and development of the tones.

First of all, the tones of modern Standard Thai will be plotted onto the diagram, by arranging them in boxes according to the original Proto-Tai tones and the original Proto-Tai consonant classes. Thus we get the diagram as follows :-

Proto-Tai initials at time of tonal splits		Proto-Tai tones				
		Smooth			Checked	
		A	B	C	DS	DL
I	voiceless friction sounds	1	3	4	3	3
II	voiceless unaspirated sounds	2	3	4	3	3
III	glottal stop and glottalised sounds	2	3	4	3	3
IV	voiced sounds	2	4	5	5	4

1 = rising tone
2 = mid tone
3 = low tone
4 = falling tone
5 = high tone

Diagram 5.2 : Tone Diagram of the Standard Dialect

In the above diagram, one may see that each of tones A, B, C, and D has two different reflexes. Proto-Tai tone A becomes Standard Thai rising tone after Proto-Tai voiceless nasal, and Standard Thai mid tone after voiced nasals. The nasals themselves have fallen together later, that is, for example both voiceless and voiced alveolar nasals become Standard Thai voiced nasal /n/. Thus in Proto-Tai,

'thick' and 'paddy field' had the same tone but different initial consonants (hna:A and na:A respectively) and in modern Standard Thai (ST) they have the same initial consonant but different tones (na:A1 and na:A2). Also it will be seen that the Proto-Tai consonant classes II and III overlap completely. In fact, Thai treats them as a single class, called klaang which means mid. Old consonant class I is called suung which means high, and old consonant class IV is called tam, low. The modern tones of ST are the result of the split of Proto-tones which was conditioned by voiced/voiceless and aspirated/unaspirated[1] features of initial consonants at that time. There is a division between initial consonant classes I, II, III as one group and class IV as the other in every column except column A (see diagram 5.2 on p.176) which marks a division between class I as one group and class II, III, and IV as the other group. This can be explained if it is assumed that at first the split was influenced by the voiced/voiceless feature of initial consonants. So each Proto-tone had split into two. But as time passed, the tones in column A merged together, which is why there is no division between consonant classes III and IV. The division between class I and II is believed to be the result of another split which occurred later than the first one, and this time it was conditioned by the aspirated/unaspirated feature of initial consonants.

It must be remembered however that the pronunciation of the modern initial consonants has changed from the original Proto-value. Some of the Proto-Tai voiced consonants are now voiceless and aspirated, some of the original voiceless ones are voiced, and the glottalised ones are not now glottalised, except for the glottal stop.

The tones of each local dialect of NR which have been described in chapter 4, plotted onto the tone test diagram are as follows :-

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[1] For the sake of brevity, 'aspiration' will be used henceforth to include all 'voiceless friction'. Class I grouped together Proto-Tai voiceless aspirated plosives, *ph, *kh, etc. with voiceless fricatives, *s, *f, *h, and voiceless nasals *hn, *hm, etc. See p.174.

Diagram 5.3 : DKT local dialect

Proto-Tai initials at time of tonal splits	Proto-Tai tones				
	A	B	C	DS	DL
Class I	1	3	3	3	3
Class II	2	3	4	3	3
Class III	2	3	4	3	3
Class IV	2	4	4	2	4

1 (rising pitch)
2 (Mid-level pitch)
3 (low-level pitch)
4 (high-falling pitch)

Diagram 5.4 : NT

Proto-Tai initials at time of tonal splits	Proto-Tai tones				
	A	B	C	DS	DL
Class I	1	3	3	3	3
Class II	2	3	4	3	3
Class III	2	3	4	3	3
Class IV	2	4	4	4	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-level pitch)
4 (high-falling pitch)

Diagram 5.5 : NS

Proto-Tai initials at time of tonal splits	Proto-Tai tones				
	A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-level pitch)
4 (high-falling pitch or S-high-rising pitch)

Diagram 5.6 : KSS

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch or S-mid-falling pitch)
3 (low-falling pitch
4 (high-falling pitch or S-high-rising pitch)

Diagram 5.7 : K

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling or low-level pitch)
4 (high-falling, S-high-rising, or S-higher-mid-rising pitch)

Diagram 5.8 : BY (Group A)
L5-10

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	4	5	4	5
Class II	2	4	6	4	5
Class III	2	4	6	4	5
Class IV	3	2	6	2	6

Diagram 5.8a : L4 (BY, Group A)

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	4	5	6	5
Class II	2	4	6	6	5
Class III	2	4	6	6	5
Class IV	3	2	6	2	6

1 (low-rising pitch)
2 (mid-level pitch or S-mid-falling pitch)
3 (high-sustained falling pitch)
4 (High-level pitch or S-High-rising pitch)
5 (low-falling or low-level pitch)
6 (higher-mid-falling pitch or S-mid-rising pitch)

Diagram 5.9 : BY (Group B)
L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	4	4

Diagram 5.9a : L2-3

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (lower-mid-rising (in L1) or low-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (high-falling, S-high-level, or S-high-rising pitch)

Diagram 5.10 : PT-L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	3	4
Class II	2	3	5	3	4
Class III	2	3	5	3	4
Class IV	2	2	5	2	5

1 (low-rising pitch)
2 (mid-level pitch)
3 (high-level or higher-mid-rising pitch)
4 (low-level pitch)
5 (high-falling pitch)

Diagram 5.10a :PT-L2

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	4	5	4	5
Class II	2	4	6	4	5
Class III	2	4	6	4	5
Class IV	3	2	6	2	6

1 (low-rising pitch)
2 (mid-level pitch)
3 (high-sustained-falling pitch)
4 (high-level pitch)
5 (low-level pitch)
6 (high-falling pitch)

Diagram 5.11 : CP, Group A

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	4	5	6	5
Class II	2	4	6	6	5
Class III	2	4	6	6	5
Class IV	3	2	6	2	6

1 (low-rising or lower-mid-rising pitch)
2 (mid-level pitch)
3 (high-sustained-falling pitch)
4 (high-level pitch)
5 (low-falling or low-level pitch)
6 (higher-mid-falling or high-falling pitch;
S-mid-rising or S-higher-mid-rising pitch)

Diagram 5.12 : CP, Group B; L3

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	3	4
Class II	2	3	5	3	4
Class III	2	3	5	3	4
Class IV	2	2	5	2	5

Diagram 5.12a : L5

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	3	4
Class II	1	3	5	3	4
Class III	1	3	5	3	4
Class IV	3	2	5	2	5

Diagram 5.12b : L6

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	3	4
Class II	2	3	5	3	4
Class III	2	3	5	3	4
Class IV	3	2	5	2	5

1 (low-rising pitch or lower-mid-rising pitch)
2 (mid-level pitch)
3 (high-level pitch or S-higher-mid-rising or S-high-rising pitch)
4 (Low-level pitch or low-falling pitch)
5 (high-falling pitch)

Diagram 5.13 : CP, Group C

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-level pitch)
4 (high-falling pitch or S-high-rising pitch)

Diagram 5.14 : PM-L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

Diagram 5.14a : PM-L2

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	3	3
Class II	2	3	4	3	3
Class III	2	3	4	3	3
Class IV	2	4	4	4	4

Diagram 5.14b : PM-L3-L5

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling, low-level, or lower-mid-falling pitch)
4 (high-falling or mid-falling pitch; S-high-rising or S-high-level pitch)

Diagram 5.15 : HTL

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (Higher-mid-falling pitch or S-high-rising pitch)

Diagram 5.16 : CKR

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (high-falling or S-high-rising pitch)

Diagram 5.17 : M(NR)

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	4	4

1 (lower-mid-rising pitch)
2 (mid-level pitch)
3 (low-level pitch)
4 (high-falling or S-high-rising pitch)

Diagram 5.18 : KTS-L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

Diagram 5.18a : KTS-L2

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	3	3
Class II	2	3	4	3	3
Class III	2	3	4	3	3
Class IV	2	4	4	4	4

1 (lower-mid-rising pitch)
2 (mid-level pitch)
3 (low-falling or low-level pitch)
4 (high-falling pitch; S-higher-mid-rising or S-high-level pitch)

Diagram 5.19 : SN

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	1	3	4	4	3
Class III	1	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch or S-higher-mid-level pitch)
3 (low-falling pitch)
4 (high-falling pitch or S-higher-mid-rising pitch)

Diagram 5.20 : SK-L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	4	4
Class II	1	3	5	4	4
Class III	1	3	5	4	4
Class IV	3	2	5	3	5

1 (low-rising pitch)
2 (mid-level pitch)
3 (high-level pitch)
4 (low-level pitch)
5 (high-falling pitch)

Diagram 5.21 : SK-L2

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (high-falling or S-higher-mid-rising pitch)

Diagram 5.22 : PC

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	4	2	3
Class II	2	3	4	2	3
Class III	2	3	4	2	3
Class IV	2	4	5	5	4

1 (low-rising pitch)
2 (mid-level or S-lower-mid-level pitch)
3 (low-falling pitch
4 (high-falling pitch)
5 (high-level or S-high-rising pitch)

Diagram 5.23 : PTC

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (high-falling or S-high-rising pitch)

Diagram 5.24 : CC-L1

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	4	4

Diagram 5.24a : CC-L2

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising or lower-mid-rising pitch)
2 (mid-level pitch)
3 (low-falling pitch)
4 (high-falling or S-high-rising pitch)

Diagram 5.25 : KB

Proto-Tai initials at time of tonal splits	Proto-Tai tones A	B	C	DS	DL
Class I	1	3	3	4	3
Class II	2	3	4	4	3
Class III	2	3	4	4	3
Class IV	2	4	4	2	4

1 (low-rising pitch)
2 (mid-level or S-mid-falling pitch)
3 (low-falling pitch)
4 (high-falling; higher-mid-falling; or S-high-rising pitch)

Presenting the phonological tones of each local dialect this way will give us some information about the patterns of coalescence and splitting which may be summarised as follows :-

4-Tone system

The local dialects, plotted onto the tone box diagram, which have this tonal system give us five different patterns of tonal split and coalescence. These patterns will be illustrated below :-

A	B	C	DS	DL
1	3	3	4	3
1	3	4	4	3
1	3	4	4	3
2	4	4	2	4

(a)

A	B	C	DS	DL
1	3	3	4	3
2	3	4	4	3
2	3	4	4	3
2	4	4	4	4

(b)

A	B	C	DS	DL
1	3	3	3	3
2	3	4	3	3
2	3	4	3	3
2	4	4	4	4

(c)

A	B	C	DS	DL
1	3	3	3	3
2	3	4	3	3
2	3	4	3	3
2	4	4	2	4

(d)

A	B	C	DS	DL
1	3	3	4	3
2	3	4	4	3
2	3	4	4	3
2	4	4	2	4

(e)

The local dialects which have these patterns are as follows :

Pattern (a) : NS; KSS; K; CP,group C; PM(L3-5); CKR; and SN.

Pattern (b) : BY,group B(L1); [illegible] M(NR); CC(L1).

Pattern (c) : PM(L2); KTS(L2); NT.

Pattern (d) : DKT

Pattern (e) : KTS(L1); SK(L2); PTC; CC(L2); KB; HTL

5-Tone System

Also in this system there are five different patterns of tonal split and coalescence which will be illustrated as follows :

A	B	C	DS	DL
1	3	4	4	4
1	3	5	4	4
1	3	5	4	4
3	2	5	3	5

(f)

A	B	C	DS	DL
1	3	4	3	4
1	3	5	3	4
1	3	5	3	4
3	2	5	2	5

(g)

A	B	C	DS	DL
1	3	4	2	3
2	3	4	2	3
2	3	4	2	3
2	4	5	5	4

(h)

A	B	C	DS	DL
1	3	4	3	4
2	3	5	3	4
2	3	5	3	4
2	2	5	2	5

(i)

A	B	C	DS	DL
1	3	4	3	4
2	3	5	3	4
2	3	5	3	4
3	2	5	2	5

(j)

The local dialects which have these patterns are as follows :

Pattern (f) : SK

Pattern (g) : CP,group B(L5)

Pattern (h) : PC

Pattern (i) : PT(L1); CP,group B(L3)

Pattern (j) : CP,group B(L6)

6-Tone System

There are two patterns of tonal split and coalescence which will be demonstrated as follows :

A	B	C	DS	DL
1	4	5	4	5
2	4	6	4	5
2	4	6	4	5
3	2	6	2	6

(k)

A	B	C	DS	DL
1	4	5	6	5
2	4	6	6	5
2	4	6	6	5
3	2	6	2	6

(l)

The local dialects of NR which have these above patterns are as follows :-

Pattern (k) : BY,group A(L5-10); PT(L2)
Pattern (l) : BY,group A(L4); CP,group A

It is interesting to note that in the tone catalogue of Chamberlain[1] on page 52, his pattern of tonal split and coalescence of Changwats Chaiyaphum, Khon Kaen which are two of the neighbouring Changwats of NR in the north-west and north respectively, and some other northeastern Changwats, is the same as one of the patterns illustrated here; that is, pattern (k). Another pattern here, that is, pattern (l) is the same as the one he reported on the dialect of Changwat Roi-et which is one of the northeastern provinces of Thailand (Chamberlain, p. 53). He also reported on the pattern of Khorat (Chamberlain, p. 52) which has the same pattern of split and coalesce as pattern (a) on page 188.

Conclusion

It is beyond the scope of this thesis to discuss in detail what conclusions might be drawn by historical linguists from the material presented in the preceding diagrams, but as far as the tonal splits according to the original Proto-Tai initial consonant classes are concerned one or two ge-

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[1]Chamberlain, J.R. " A New Look at the History and Classification of the Tai Languages."

neral points may be noted :-

(i) Though there are many local dialects which have a 5-Tone System like Standard Thai (ST), only the local dialect of PC has nearly the same pattern of split and coalescence of ST.

A	B	C	DS	DL
1	3	4	2	3
2	3	4	2	3
2	3	4	2	3
2	4	5	5	4

(PC)

A	B	C	DS	DL
1	3	4	3	3
2	3	4	3	3
2	3	4	3	3
2	4	5	5	4

(ST)

The only difference is that the tones of DS and DL on the first three rows are the same in ST, but are different in PC.

(ii) Tones in column B and DL always reflect the ±voice split, but never the secondary ±aspiration split. The relation between tones in column B and DL is the striking thing which interests Tai linguists. The B-DL coalescence is complete only in the 4-Tone System (see patterns a-e on p.188), and one of the 5-Tone System, i.e PC. Chamberlain claims that the B-DL relation (see Chamberlain, p.50) may be used as the criterion to classify the Tai languages of the Southwestern branch (SWT). That is, Thai, i.e ST has B=DL; while Lao has B≠DL. This is supported by the data in this thesis as one may see on p. 188-190. Thus the NR dialects in which B≠DL may be classified as belonging to the Lao group, whereas there in which B=DL may be grouped with ST. It will be seen from the map on p.170 that the 4-Tone System seems to be most numerous and most central in the area, and thus may be claimed to be the characteristic tonal system for Changwat NR. As expected, PC (no.16 on the map on p.170) adjoins the Central Thai area, while the 6-Tone dialects adjoin the Lao-Isan dialects, which have six tones (some may have seven).

(iii) Tone A always reflects either the ±aspiration split or ±voice split; or both. In the case where the ±voice split is not evidenced in the current system, it is generally assumed by historical linguists that although

this split occurred there was a subsequent reunification of the tones, followed by a later ±aspiration split (see diagrams b-e on p.188 and h, i on p.189).

(iv) Tone C is striking in this group of dialects in that it almost always reflects the ±aspiration split, except in PC (see h on p.189) which reflects the ±voice split. Perhaps we are to assume here a similar history to that of Tone A in ST (see p.177) and some local dialects shown on p.188 and 189. The exceptional case in which Tone C does not reflect the ±aspiration split is PC, which behaves in this as in almost all other respects like ST, and unlike the majority of NR local dialects.

(v) DS almost always reflects the ±voice split, but in some case for example in HTL, CC, etc.(see pattern b, p.188) there is no division at all in this column. It may be assumed that the split occurred but the tones merged together later.

(vi) In none of the NR local dialects is there are a simple two-way split reflecting the Proto-Tai ±voice distinction as there is for example in Tai Nong as described by Tingsabadh[1]:

	A	B	C	DS	DL
Tai Nong	1	2	3	6	2
	1	2	3	6	2
	1	2	3	6	2
	4	5	6	4	5

(vii) In all the NR local dialects Class III initials, i.e. the glottalised ones, are always grouped together with Class II, i.e. the unaspirated voiceless stops. This is not always the case in other dialect areas. In Chiangmai dialect in Changwat Chiangmai for example, there is a tonal split between Classes I and II on the one hand, and Classes III and IV on the other, i.e. the glottalised ini-

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[1] Tingsabadh, M.R.Kalaya p. 161. N.B. The DS and DL columns have been reversed in error in this table but it is clear from the text that the table should read as given above.

tials are here classed with the voiced ones, as shown below:

Chiangmai[1]

A	B	C	DS	DL
1	3	5	1	3
1	3	5	1	3
2	3	5	1	3
2	4	6	6	4

(viii) In none of the NR local dialects is there a regular ±aspiration split on all tones. Elsewhere, e.g. in Songkhla, a southern Thai dialect in Changwat Songkhla, there are regular ±voice and ±aspiration splits for all tones, as shown below :-

Songkhla[2]

A	B	C	DS	DL
1	1	5	1	5
2	2	6	2	6
2	2	6	2	6
3	4	7	7	4

It will be seen from the above that careful comparison within a dialect area, and between dialect areas, may bring to light features about the tones and their distribution which may be said to characterised a particular dialect area. It may also be possible to go on from this to surmise the nature and sequence of certain segmental sound changes that have taken place in the area in question since Proto-Tai times.

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[1] adapted from Haas' Chiangmai chart in "The Tones of Four Tai Dialects".

[2] information from Chantavibulya's M.A Thesis, 1959.

APPENDIX 1

TONOGRAMS OF PITCH PATTERNS IN K LOCAL DIALECTS

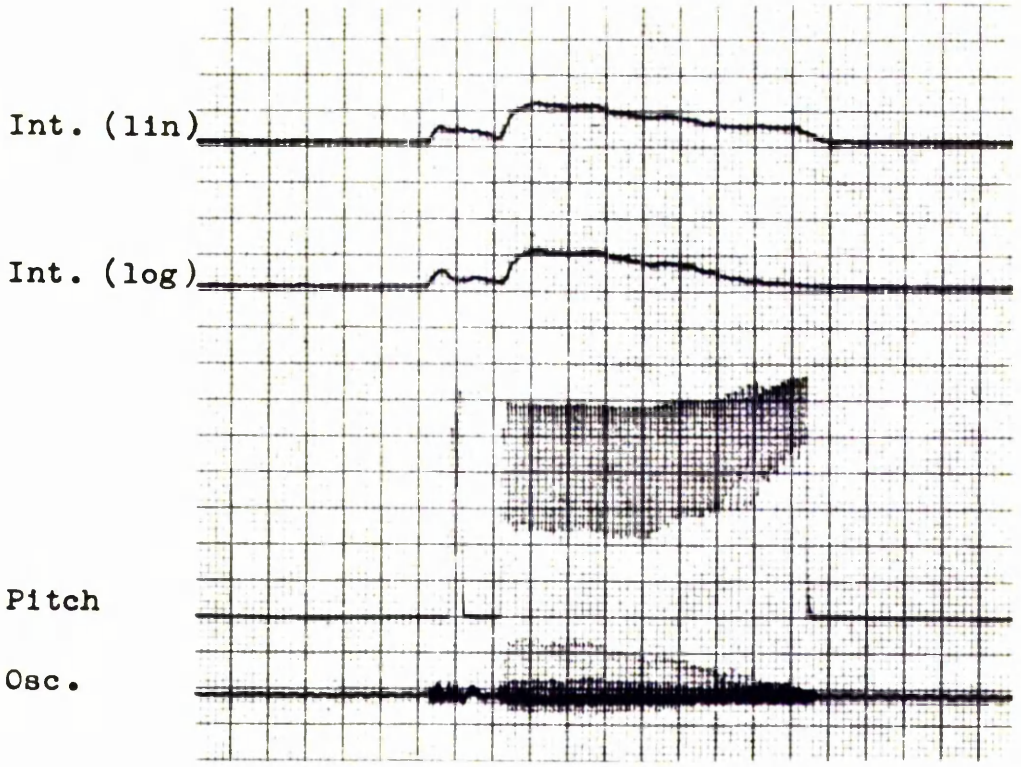
The following tonograms are produced by the following three instruments :-

a. The FRØKJAER-JENSEN Trans-Pitchmeter which is an instrument for converting varying frequencies into varying D.C. voltages; the lower frequencies converting to a progressively greater voltage as the pitch falls, and conversely, to a lesser voltage for the higher frequencies.

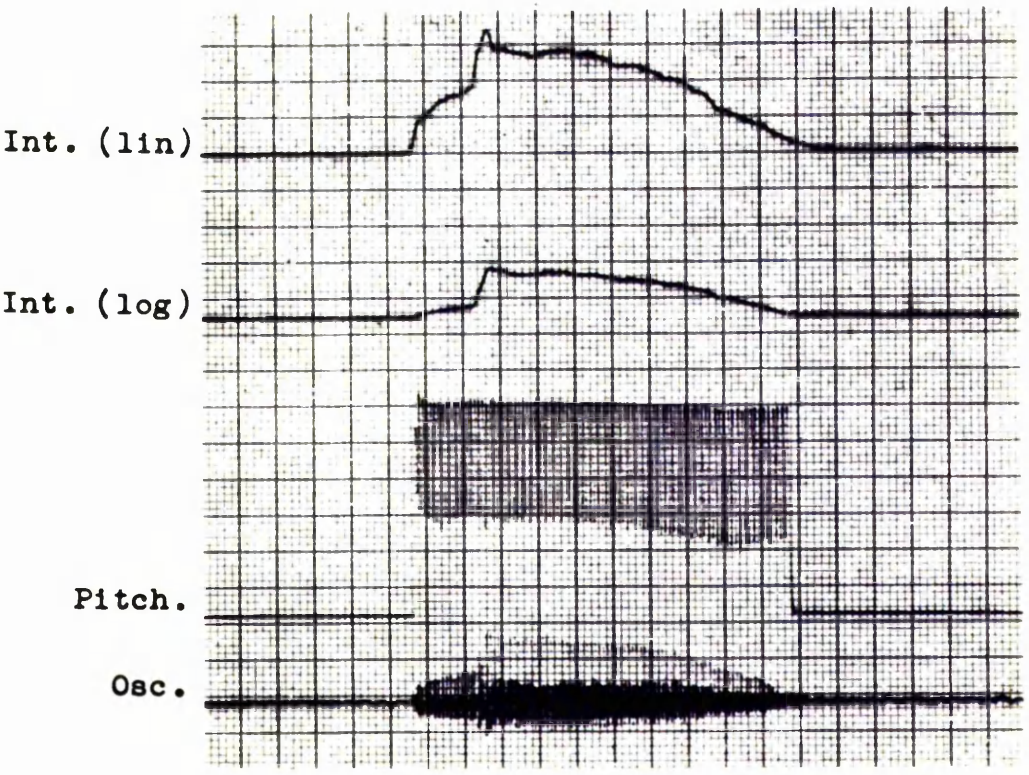
b. The FRØKJAER-JENSEN Intensity meter

c. The ELEMA-SCHONANDER Mingograf 800 which is an ink-writing oscilloscope.

A calibration grid is provided in the back pocket of the thesis to facilitate the reading of the tonograms.

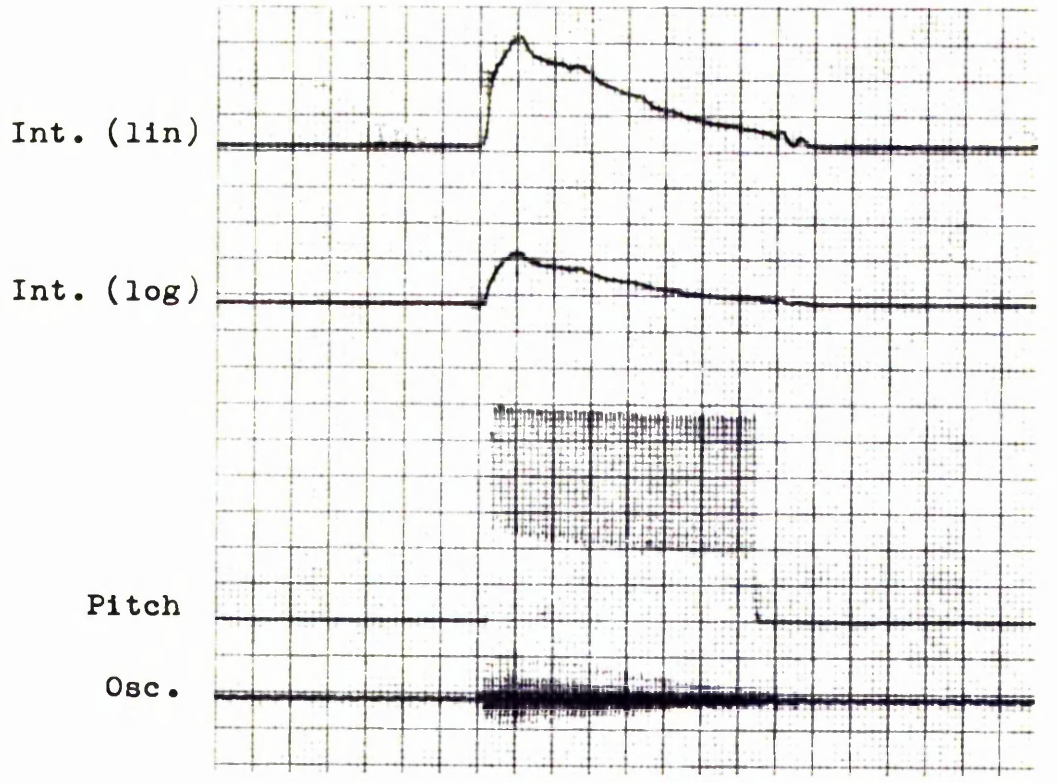


1. kha: [leg]

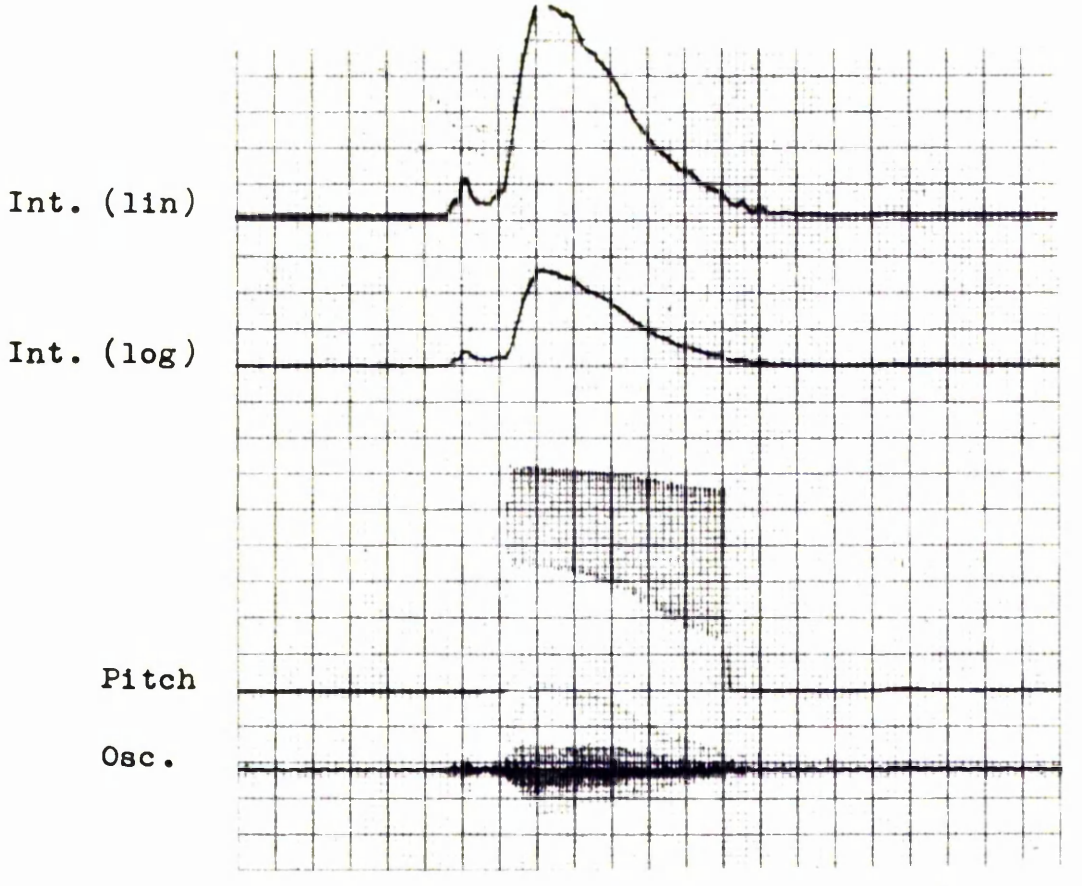


2. na: [rice field]

Time:- 1 mm. = 1/100 of a second

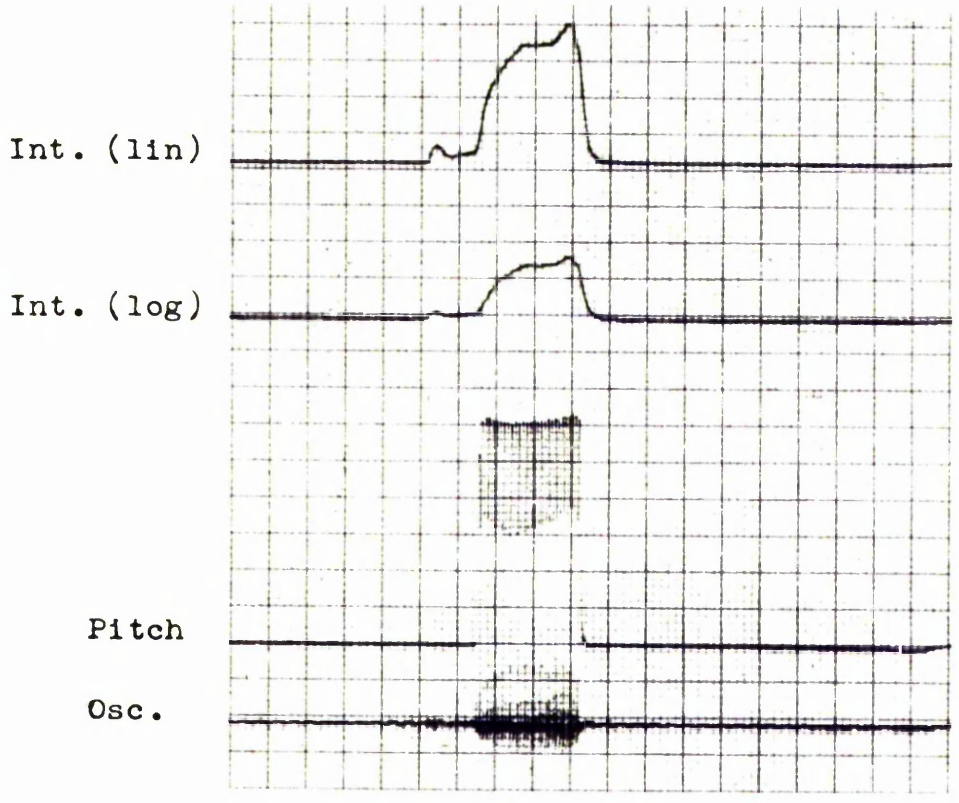


3. pa: [forest]

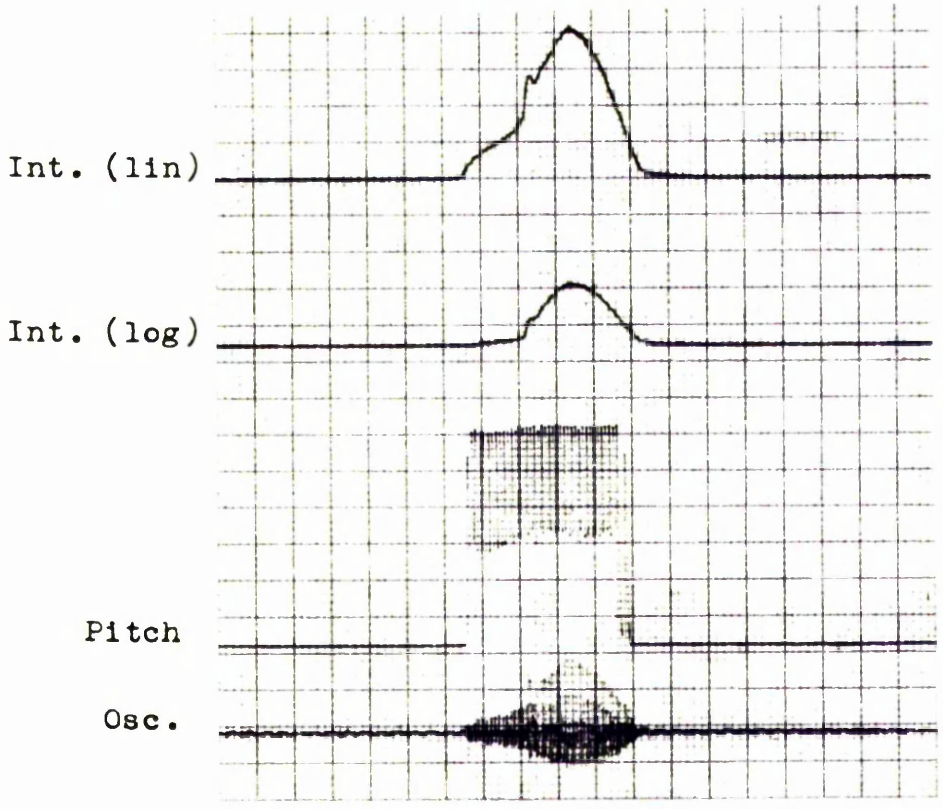


4. kha: [to trade]

Time:- 1 mm. = 1/100 of a second



5. khat [to scour] ⊢



6. nok [bird] ⊢

Time:- 1 mm = 1/100 of a second

APPENDIX 2

The following check list of test words was used, along with the tone test diagram as illustrated in Chapter 5, in this thesis to discover the tone of each local dialect. It was developed by Gedney over a period of several years during the course of his fieldwork on over a hundred Tai dialects belonging to every branch of the family. These test words are given with the Standard Thai consonant and vowel values but without indication of tone, since it is precisely tones that are being sought. The transcription has been adapted to accord with that used in this thesis.

Column A :

Box 1.	hu:	'ear'
	kha:	'leg'
	hua	'head'
Box 2.	pi:	'year'
	ta:	'eye'
	kin	'to eat'
Box 3.	bin	'to fly'
	dɛ:ŋ	'red'
	da:u	'star'
Box 4.	mɯ:	'hand'
	khwa:i	'buffalo'
	na:	'ricefield'

Column B :

Box 5.	khai	'egg'
	pha:	'to split'
	khau	'knee'
Box 6.	pa:	'forest'
	kai	'chicken'
	kɛ:	'old'
Box 7.	ba:	'shoulder'
	ba:u	'young man'
	da:	'to scold'
Box 8.	phi:	'older sibling'
	phɔ:	'father'
	rai	'dry field'

Column C :

Box 9.	khau	'rice'
	sɯa	'shirt'
	kha:	'to kill'
	khai	'fever'
	ha:	'five'
Box 10.	pa:	'aunt' (older sister of either parent)
	hia:	'rice seedlings'
	tom	'to boil'
Box 11.	ba:	'crazy'
	ba:n	'village'
	ʔa:	'to open (the mouth)'
Box 12.	na:m	'water'
	nɔ:ŋ	'younger sibling'
	ma:i	'wood'
	ma:	'horse'

Column D-short :

Box 13.	mat	'flea'
	suk	'cooked, ripe'
	phak	'vegetable'
Box 14.	hop	'frog'
	tap	'liver'
	cep	'to hurt'
Box 15.	bet	'fishhook'
	dip	'raw, unripe'
	ʔok	'the chest'
Box 16.	nok	'bird'
	mat	'to tie up'
	lak	'to steal'

Column D-long :

Box 17.	kha:t	'broken, torn'
	ŋɯak	'the gums'
	ha:p	'to carry on a shoulder pole'
Box 18.	pɔ:t	'the lungs'
	pi:k	'wing'
	tɔ:k	'to pound'
Box 19.	da:t	'sunshine'

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